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Smash-hit *PCW* show breaks all records





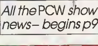
Brataccus from Psygnosis ↑

Atari 260ST—includes 3 " drive ↓





All the PCW show news— begins p9









INSIDE ❯ **GIFT COUPON AND MUD COMPETITION — P8**



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EDITORIAL

Apart from the disappointment of the Sinclair stand, this year's *Personal Computer World* Show was the most exhilarating for years.

For one thing it signalled the first signs that the new 68000-based machines really will be a quantum leap. *Brataccus* on the Atari looked very good indeed and, for what is almost the first entertainment package for the new machine, it was outstanding. It will also run on the 260ST – a machine which should sell for under £500.

The Amiga – Commodore's ST rival – also looks set to have some dazzling software. Although the machine was not shown in the public display, Commodore's private previews showed among other things a flight simulator with incredibly fast *solid* 3D graphics and stereo sound sampled from a real 747. The two machines are a vindication that 68000 *is* a fundamental advance for domestic micros. But it is also an important reminder of the importance of support chips in the design of a new machine. The more one sees of these machines the more one realises how horribly wrong Sinclair went with the QL.

Between the ST and the Amiga a choice is easy. The Amiga has everything. Sound sampling. Graphics and animation capabilities the like of which have never before been seen at four times the price. True multi-tasking. And because of its three custom chips the processor is often only using a fraction of its power. The speed of its line drawing and hardware area-fill routines have to be seen to be believed. As if that wasn't enough the Amiga can be fully IBM compatible running IBM software at the IBM's slow speed (Commodore's joke). Everyone who sees the machine becomes captivated by it.

But there is a real danger that this wonderfully intoxicating micro cocktail has too many ingredients.

Its performance per buck is incredible. But, whichever way you look at it, £1,000 is still an awful lot of money.

It is quite likely that Atari has better judged the market in the UK. Its 260ST offers a lot less but costs under half price. The Amiga may be the machine you would love to own, but the ST may be the one you can afford.

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Computer Trade Association Magazine of the Year

C16s and Plus/4s go out of fashion

COMMODORE has confirmed that it is to drop the C16 and Plus/4 computer in the UK

"I don't think there will be any Plus/4s or C16s available after Christmas" said Commodore's sales and marketing manager Paul Welch "By then we will have built out all our remaining component stocks"

Sales of both machines have been disappointing, and each has suffered heavy high-street discounting, especially the C16 which was launched at £129 and has been widely available at £69 95 for some months

Despite the absence of any C128D models at the *Personal Computer World* Show, Commodore claims that the machine – the version of the C128 with a built-in 5¼ inch disc drive – is still planned for release, possibly in time for Christmas

The C16 (top) and Plus/4

"We don't have any dates finalised for the C128D, but it's not dead," said Gail Wellington, Commodore's European software manager

It is understood that Commodore UK is keen to introduce the machine in this country, as a reply to Amstrad's CPC6128 and PCW8256, and Atari's 260ST, all of which have built-in disc drives

However, Commodore US is not so keen – in the States, the 8-bit machine could conflict with Commodore's new 16-bit Amiga, even more heavily than the stand-alone C128, as a home machine Moreover, the external appearances of the C128D and Amiga are very similar, with separate keyboard and drive unit in almost identical colours

When the C128D does appear in the UK, it will be priced at around £500, according to Paul Welch The arrival of both the C128 models will also pave the way for the Commodore 64 to be rehoused next year Paul Welch admitted that its five-year-old casing is beginning to look a little dated

Upgrades for 664 on the way – but not from Amstrad

AMSTRAD has categorically denied that it will offer any up-grade to CPC 664 owners to turn their micros into the equivalent of the CPC 6128

However, add-on Rampacks are expected by the end of October from third-party vendors In Germany, users can already buy 256K of add-on memory

"Amstrad will not be doing any up-grade or compensation scheme itself, but we're quite happy for third parties to provide add-ons," said Amsoft's William Poel.

The CPC 6128 which has superseded the 664, was launched in the US in June. At that time, Amstrad claimed it would not be launched over here until next year

The discontinuation of the CPC 664 has provoked an angry reaction from owners, not only because that their machine was withdrawn so soon after launch, but also because Amstrad gave no warning of the machines demise Many dealers have also been left with quite high stocks of the 664 whose price was higher than that of the 6128

Amstrad apparently denied it had any plans to launch the 6128 in the UK up to as little as 28 days before the machine appeared in the shops One 664 owner, college student Ben Woolley, claims that before buying his machine on July 20, he telephoned Amstrad to ask if the machine was to be discontinued According to Ben an Amstrad representative assured him that the CPC664 would not be dropped, and that the 6128 was intended only for the US market.

"Amstrad never announces a product before it is ready," William Poel explained. "It is entirely possible that the person on the phone did not know of the policy to bring over the 6128

"Amstrad is a large company and there are employees who don't even know we produce computers at all."

Over 170 titles for Atari ST

ATARI has an impressive list of over 170 software titles currently being written for its 520ST micro, publicly shown for the first time in the UK at the *PCW* Show

The majority of the titles will also run on Atari's cutdown ST model – the 260ST The 260ST is now scheduled for UK sale between October and Christmas.

The majority of the planned programs are business titles such as word processors – with BOS's *BOSWriter*, Fydler's *Mailmate*, *Spellmate* and *Wordmate* and Precision's *Superscript* all set for launch before Christmas, in addition to *Gemwrite* which is bundled with the ST

Database packages are expected from Talent Computer Systems, BOS (*Autoclerk* and *Autoindex*) and Precision (*Superbase*) among others, although Precision and Talent do not expect to release theirs until January 1986

Mosaic, BOS, Kuma and Haba Systems all have spreadsheets planned, and business graphics packages, include Fydler's *Mastergraph* and *Cadcam* from Rising Star

There will also be a number of languages, including Metacomco's series, HiSoft's C, Pascal and *Devpac*, and Computer One's *Assembler/Monitor*, C, Pascal and Forth.

Island Logic is converting its *Music System*, Crossbox Music plans a *Music Writer*, and Mirrorsoft releasing *Fleet Street Editor*

On the entertainment side, Infocom is translating its entire adventure range, and hopes for launch by October Jeff Minter is converting his light show *Colourspace* for Llamasoft, Talent plans to make *Zkul* and *West* available while Firebird is developing a new game, *Star Glider*

High street shuns Acorn

FOLLOWING the launch of the 128K version of Acorn's BBC B Plus, the future of the existing BBC machines and the Electron looks doubtful.

The machines have already been dropped by some retailers, and the Electron was given a very low profile at the *PCW* show

W H Smith has already discontinued both the BBC micro and the Electron and Rumbelows is not now reordering until it has selected its Christmas range and ascertained that Acorn's machines are on the list

"We're completely out of stock of the BBC at the moment," said Terry Greenwood of Rumbelows "But we still have to decide which micros we'll be offering at Christmas, and we're no more likely to drop the BBC than any other machine"

Acorn has recently concluded an agreement with Dixon's for the latter to sell the Electron in a bundled pack – a deal which, it is thought, will clear most of Acorn's remaining stocks

Dixon's Electron pack costs £99.99, and offers the computer with a data recorder and five pieces of software

More news on page 8


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DEMONS OF TOPAZ
Commodore 64
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Commodore Computing Int. Game of the Month May 1986
GOLD EDITION


It does accounts, projections,
No wonder people are racing out to buy Amstrad's new CPC 6128 computer
Not only does it answer all your business needs, it's also compatible with nearly 200 arcade and adventure games So it can either speed you through your income tax returns or whizz you round a simulated Silverstone
On the business side we start you off with a free disc which introduces you to the Amstrad CPC 6128's impressive range of capabilities, and the best ways to exploit them.
You'll discover how its massive 128k memory can open the door to over 8,000 CP/M* applications
Programs like 'Wordprocessing' and 'Database' will file and index records, produce standard letters, mailing lists and even compile reports
There's a series of business control programs which form a complete invoice, stock control and statement system
In other words it's easy to choose the software you need to take the big problems out of your small business
But even if you don't own a business there are plenty of good reasons for owning an Amstrad CPC 6128
It makes short work of the problems we all face Like keeping track of rates, mortgage and H P payments
However even software packages as comprehensive
AVAILABLE AT BOOTS BRIDGERS CLYDESDALE COMET CURRYS DIXONS GRANADA GREENS LASKYS JOHN LEWIS RUMBELOWS

wordprocessing and 180mph.



as Amstrad's are only as good as the hardware they're loaded into

You need a complete system

That's why the Amstrad comes complete with a built-in disc drive as well as a monitor (green screen or full colour) So it's ready to go to work as soon as you get it home

And if you want to go further additional disc drives, printers and joysticks are all available to ensure that your computer can grow with your growing needs

Finally there's one feature of the Amstrad CPC 6128 that's both good business and a pleasure the price

With Green Screen around	**£299**
With Colour Monitor around	**£399**

Tell me more about the Amstrad CPC 6128

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Amstrad CPC 6128 with 128k memory

Who says business and pleasure don't mix?

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In proportion?

W Thompson (letters August 8) has got things rather out of proportion

No one is denying that playing computer games is not fun and, yes, we all enjoy zapping rampaging toilet seats

But that doesn't mean we live all our lives playing games

Cetin Munir
Stroud Green
London N4

QL flop

A Sinclair spokesperson said that the decisions to halve the price of the Sinclair QL was due to "reduced component cost, and increased volumes"

What twaddle! You must either be a loyal owner of a QL, or a Sinclair employee not to realise the QL has been a flop, a whole flop and nothing but a flop

Only 60,000 QLs have been sold in the 19 months since its triumphal launch After the delivery delays that everyone but Sir Clive expected, the QL hit the streets and that's when the trouble really began

There seemed to be more bugs in the Basic and the operating system than there were machines sold! The Microdrives, with the bundled software, were as slow as the Sinclair delivery department.

I admit the machine has memory, enough to make any BBC owner drool visibly But it has yet another disadvantage, which must have put off more potential customers than Sir Clive's creditors would like to recall. Software Or a lack of it You can count on the fingers of no hands the amount of "megagames" out for the QL

Sinclair should now admit defeat in the business market, and put every effort into ensuring that software houses unleash their programming skills on to the QL

Peter Scott
Bedlington
Northumberland

Popular Free Gift Coupon

Here is the first of the four coupons you will need to claim your special *Popular Computing Weekly* Free Gift – a tape of Arcade Addicts Handbook

Cut out the coupon and stick it onto the special reply flap attached to the front of this issue Collect the coupons from the next three issues as well, stick them to the reply flap and send it in to claim your *Popular* Free Gift

Free Gift Coupon No 1

MUD
MULTI USER DUNGEON

MUD Challenge Competition

More than a competition, more like the greatest challenge an adventurer can face

This week *Popular Computer Weekly* (where things of beauty, truth and honour hold sway) seeks a champion to take on representatives from the plains of darkness, evil and inflated circulation figures (other computer magazines) and fight for us in MUD – where the baddies are so real you can speak to them!

MUD

MUD is an adventure game played, using a modem link, on a vast database run by British Telecom It features all the classic adventure elements, mysterious objects, magic objects, treasures forests and complex puzzles but with one important additional feature – lots of people can play it at once and you can meet and converse with other players on your travels This adds possible elements like rivalry, betrayal and joining forces

The Challenge

A representative from each of the computer magazines will be provided with a MUD pack consisting of all you need to get started and free tuition on-line advice on how to play from a MUD champion

You will fight it out at a MUD marathon to be held later in the year at the London Dungeon.

The Competition

Our champion will be the winner of the following competition All you have to do is answer the following questions, carefully designed to reveal your true adventuring mettle, then fill in the sentence at the end in not more than 12 words Competition closes 30th September 1985 Five runners up will receive Firebird Silver Games

1 Who wrote the original Colossal Caves? ....

2 How do you escape the Trolls in The Hobbit? ....

3. Who wrote the Zork trilogy? ....

I want to be *PCW*s champion because ....

Name ....
Address ....

News Desk

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Amiga – further details emerge

MORE details are emerging on peripherals available for the advanced Commodore Amiga micro, now scheduled to be launched officially in the UK in the first two months of next year

The machine is available in the US at a price of $1295 (around £1,000) for the keyboard, mouse and disc drive The A1080 monitor, a high resolution ((640 x 400 pixels) 80-column colour model costs an additional $500 (£380), although the Amiga does include a modulator, allowing it to be connected to an ordinary domestic television. The PAL UK TV version is currently under development and first models could well be circulated to development houses by the end of this year

A second $3\frac{1}{2}$ inch disc drive costs $300 (£230) and a 256K memory expansion – bringing the memory up to 512K – costs $195 (£150)

With the addition of a PC DOS emulator for under $100 (£80) the Amiga becomes IBM compatible Another $100 will buy an accelerator to make transfer speed on IBM files the same A $5\frac{1}{4}$ disc drive to take IBM compatible discs costs $500 (£380)

Olivetti completes Acorn rescue

ACORN's refinancing procedures are now complete, and Olivetti has officially acquired 79.8% of the company (see *Popular*, August 1)

At the Extraordinary General Meeting held last week, shareholders approved the issue of 400 million new shares to Olivetti international for £4m

Which is the main event?

Pazazz at PCW

The star of this year's *Personal Computer World* Show – the most exciting for several years – was unquestionably Atari. Its new low-cost 16-bit 520ST stole the show with strong software support. Amstrad proved a big attraction, too, its stand showing the 6128 and 8256 for the first time was an impossible crush throughout the five-day event.

Big crowds and many new products made it the biggest ever *Personal Computer World* Show – with a record 70,000 visitors. Not bad for an industry fashionably at death's door. The only let-down was Sinclair which had nothing new on the hardware side except a new printer.

The promotional displays are getting bigger and brasher, though. For movie lovers, clips from *Rambo: First Blood Part II* and *Goonies* were on continuous display at Ocean and US Gold's stand respectively. Ariolasoft showed its games on a giant screen overlooking the balcony, Melbourne House incorporated holograms. Quite what System 3 was attempting to promote was unclear, but it involved a mix of karate, a Rambo not-very-look-alike (on loan from Ocean?) and a troupe of women brandishing whips and weaponry.

Atari and Amstrad dominated as far as hardware at the show. Atari had always threatened to take over virtually the whole of the ground floor with its 520 STs — on show in the UK for the first time in public — officially launched at the show.

Perhaps Atari had not bargained for Amstrad's whirlwind of summer activity when it looked as though we could expect a new machine a week.

Amstrad's PCW 8256 and CPC 6128 were being warmly received by visitors. However, the company was also showing software running on the now defunct CPC 664. Reactions to this were rather cooler, particularly from people who had bought a machine recently and dealers left with large stocks.

In addition to well over 50 520STs, Atari also showed a 260ST, with the built-in drive, in a vast glass case which also housed a Winchester hard disc unit for the 520ST.

The 260 ST is designed to be fully software compatible with the larger version. The disc drive version, which will probably only be available in Europe, has the 3½ inch drive fitted very unobtrusively under the keyboard at the back of the left hand side. Atari hopes the 260 ST will become available before the end of year, and possibly as early as October at around £450.

The 10M hard disc shown, the SH 317, was a prototype version only, but again this is scheduled for a Christmas release at around £850.

One disappointment was the non-appearance of the CD Rom which Atari showed at the American CES in June.

"Our CD Rom player is with software developers at the moment," said Atari's UK sales and marketing manager Bob Harding. "We are still planning to release it in this country."

Acorn managed to spring a surprise on most people at the show by prominently displaying a 128K version of the BBC B.

The 128K BBC B Plus is simply the 64K version with another board fitted in. The extra 64K Ram is made up of four sideways Ram slots, and Basic programs are stored in this space. The new machine should be available by the beginning of October at £499. The 64K BBC B Plus sells at £469. Acorn claim no price changes are planned, but it seems likely that the 64K B Plus will now quietly disappear.

Acorn was showing a number of peripherals with the BBC — including a display of robots controlled by the machine. It also had a CAD (computer aided design) system controller from Robocom on show. The Bitstick itself looks a little like a joystick, but each movement is precision controlled, to enable meticulous design graphics on screen.

Acorn's new 128K BBC B

New products on Sinclair's stand were confined largely to software, although some new peripherals for the QL were on show. The disc drive from Microperipherals which Sinclair is putting its own name to, was being shown prominently. The 3½ inch disc drive package comprises drive, disc interface, and a utilities disc for £285.70. Additional drives cost £159.85.

CST's Winchester hard disc was also being shown, with a 10M capacity, and a peak transfer of 600K per second, this costs £1,380.

Sinclair is also planning to badge manufacture a printer for the QL to be brought out around Christmas, at around £260. Sinclair stand representatives were quick to point out that the unnamed, unmarked printer being used with the QL was not necessarily the model that will be appearing in the shops under Sinclair's name.

However, there was no sign of any new machines. It is now thought any further embellishments to the Spectrum Plus may not appear until next year. Sinclair claims that the Spectrum Plus is currently selling as strongly as ever, if not more strongly, and "if it ain't broke, don't fix it" was the attitude, according to a Sinclair spokesman.

Commodore's stand was almost entirely devoted to the C128, although Music Sales took over around one quarter of the space to demonstrate its range of music hardware and software for the Commodore 64.

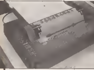
The C128 is now expected in the shops any day now, although only in the stand alone configuration — there were no C128Ds at the show.

"We don't have any release dates for the C128D at the moment, but it is by no means dead," said Commodore's Gail Wellington. "We never deliberately set out to release the two versions

continued over the page

simultaneously."

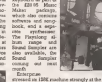
The Amiga was not shown to the public. Special viewings to trade and press representatives were arranged, however. The reason, according to Commodore staff, was twofold — the C128 was intended to attract all the attention at the show, and it was too early to be showing a machine that will not be launched in this country until early next year. Despite this, there were huge queues at Metacomco's stand, where visitors hoped that the authors of Amiga Dos would have it on public display, and Commodore's trade and press demonstrations at the nearby Royal Kensington Hotel were packed.



Sinclair's new printer

The C128s were shown running a variety of software — *Way of the Exploding Fist* and *Frankie* to demonstrate C64 compatibility, and CP/M programs showing the machine in CP/M mode.

Music Sales gave continuous demonstrations of its range for the 64. Its series includes, on the hardware side, a mini synthesiser overlay for the 64's own keyboard as part of the £28.95 Music Maker package, which also contains software and song-book, and a separate synthesiser. The Playalong album range and Sound Sampler are also available, the Sound Sampler coming out next month.





Enterprise stressed its 128K machine strongly at the show — there were no 64s on the stand at all. "Frankly, the 64K machine simply isn't in demand," said on stand representative.

However, with the 128, Enterprise was making a strong display of its disc controller EXDOS. This powerful controller will connect to any Shugart 410 interface drive, so that, 3, 3½ or 5¼ inch drives can all be used. It is also compatible with MS-DOS which gives the machine file compatibility with IBM, Apricot and MSX type machines. The disc controller costs £99, and is due out this autumn.

Four of the MSX manufacturers joined forces for an MSX stand — JVC, Sony, Mitsubishi and Toshiba. Toshiba, incidentally, also gave a 'home of the future exhibition' separately at the show.

Toshiba's new HX-22 adorned both stands, while Mitsubishi and JVC also displayed enhanced MSX machines, with 128K Video Ram and 80 column screens.

JVC's HC-80, already available in Japanese shops, is set for launch here in spring 1986. The display at the show demonstrated the capability of the HC-80 to control a video disc player, putting captions on screen from the computer.

Mitsubishi's GL1 was being used as a frame grabber, digitising pictures from a video camera set adjacent to the stand. Software can then be used to manipulate the digitised image, making it smaller, larger or changing its screen position.

Mitsubishi was also showing a version of its enhanced machine configured like a PC with a separate keyboard connecting to a 3½ inch disc drive and cpu in one unit, but still retaining the standard Z80 processor. This machine, in prototype version only at the moment, will cost around £500 when brought over here.

The other enhanced MSXs are expected to cost around £250-£300 as the prices of current models continue to fall.

Christina Erskine

Software takes a leap

Much new software was promised for the PCW show and some was delivered. Several promised megagames either didn't turn up or were represented by demo screens only, others appeared vicariously as excerpts from the films they were based on.

This is a bizarre trend I've noticed over a couple of shows now: some of the bigger companies bring along great piles of monitors showing last year's blockbuster film they've licenced, or various pop groups. Certainly people stand and watch the movies, but does it make them buy the game?

During my two hour quest for the Sunshine stand I came to several conclusions. There were some new programs that were superb and there were some that were so astoundingly tedious you could be forgiven for thinking this was 1983.

Some of the impressive new games were expected — *Fairlight*, *Wizardry*. Some were real surprises like Sandy White's stunning new game *I, of the Mask* and Psygnosis' *Brataccas*, the best kept secret since the bombing of Pearl Harbour and my vote for game of the show. More of these two later.

Some of the most awe-inspiring computer program demos weren't at the show at all. That is to say they were in the show, but not at it. Or rather they were in the show to those at the show with a magic grey invitation. You can tell from all this stuff that what we are talking about here is the Amiga which was and wasn't there.

The demos of a flight simulation on the machine featured samples 737 engine noises — it sounded exactly like a real plane. After seeing the Amiga in action, Jeff Minter, famed psychedelic game designer, seemed to be walking two inches off the ground in ecstatic delirium.

From software you can't buy on a machine that wasn't at the show to the stuff that you can buy on the machines that were. Mikro-Gen was due to show *Shadow of the Unicorn*, the first of its series of games using the Mikro Plus, but it was not in evidence. Apparently it was 'sent back for improvements to some of the graphics'.

Mikro Gen were showing a demo of



I, of the Mask from Electric Dreams

Three weeks in Paradise from Mikro-Gen

Three weeks in Paradise, a Wally program that will be using the device although the demo, in fact, was not using the system. As such it looked like the other Wally games with nice detailed graphics and an assertive indifference to attribute problems. Also impressive was a demo screen of *Battle of the Planets*, licenced from the BBC cartoon and featuring slick vectors graphics.

In a similar position was Beyond who showed a short demo program of its mega marketing deal, *Supermen* which revealed some smart graphics, but little else.

More complete was *Enigma Force*, a mighly impressive *Shadowfire* follow-up, which looked to have similar design but some nice new touches, including even better music.

Around the corner, Melbourne House was showing *Lord of the Rings* featuring full colour and animation — the only problem was that it was the cartoon film not the computer game. The latter was nowhere in sight. *Way of Exploding* seems to have chopped its way deep into the company's consciousness because being demoed was *Fighting Warrior* a game which, though described as a "quest arcade game set in Egyptian times", seemed to feature quite a lot of kicking, punching and hacking.

Young Ones from Orpheus

When not dreaming of Amigas, Jeff Minter was to be found on the Llamasoft stand with his latest creation *Batlyx* which looked fiendishly complicated and very colourful. I can say little about it except that I think the goats are back again.

The System 3 stand drew vast crowds every two hours, hmmmm, must be the new Karate game you're saying. Wrong! Instead of films, people in fancy dress or a guest celebrity, System 3 had a dance troup of writhing women wearing virtually no clothes at all. This is an old computer show trick and goes a bundle with tired distributors in need of entertainment.

Orpheus were showing a few screens of the *Young Ones*, the computer game version of everyone's favourite half hour of anarchy. The characters did vaguely resemble the people they were supposed to be, Neil's round shoulders being particularly in evidence. The Commodore version of the game featured some excellent sound as well.

Martech had the biggest personality tie-up, when it had big personality Geoff Capes tied up with trucks in *Geoff Capes Strong Man* — the game. The graphics looked nice, but I couldn't help thinking that sporting personality tie-ins were beginning to get a bit tired. Who's going to be first with Terry Wogan's chat show challenge?

Rod Cousins had a section of the Activision stand for the first two titles from Electric Dreams — his new software house. *Riddler's Den* looked a bit Ultimatesque, but *I, of the Mask* looked stunning. The game appears to use the kind of 3D design and shading techniques Sandy White used on *Ant Attack* to create a vast three dimensional maze.

It also features a giant mask that floats across the screen. Parts of the game could almost be left static like computer art, just to be appreciated for their own sake. Sandy hopes to get the game finished within a couple of weeks.

Bratacces from Psygnosis

The Activision stand proper had a couple of new titles on show, in particular the enigmatic *Hacker*. A program whose complete lack of background information is part of the point. You Log on and take it from there, trying to find out what on earth is going on. It looked impressive, but isn't the sort of game to be judged quickly staring at a monitor at the show.

Firebird finally showed its Ultimate conversions for the Commodore 64. *Sabre Wulf* looked exactly like *Sabre Wulf* down to the last detail — I almost think I saw an attribute problem.

Mirrorsoft had the first BBC version of *Fleet Street Editor* on show. This all in one package mixes word processing, layout, design, picture manipulation etc, and is designed to enable the simple production of magazines, fanzines and other printed information.

There were inevitable jokes about it replacing the NGA and solving the *Mirror*'s problems that were greeted with fixed grins by Mirrorsoft staff. It impressed me a great deal, although the system only becomes really viable with plenty of memory, a disc drive and a good printer.

Also on the BBC was *Strike Force Harrier*, a simulation of the Harrier Jump Jet which featured quick screen updating and detailed graphics.

A surprising proportion of the serious software around was for the ST which was much better supported than anyone expected.

The ST was also running the game of the Show — *Brataccas* by a new company called Psygnosis.

Psygnosis turns out to be some ex-Imagine people and *Brataccas* turns out to be stunning.

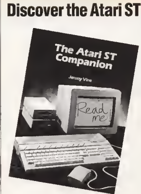
It's the first game that really looks like it's running on a powerful machine. Imagine *Dun Darach* with much more detailed and colourful graphics, even more character independence, and some stunning animated effects. From the box cover by Roger Dean, to the beard on the funny man who floats about on a hover chair the package looks impressive. Don't look at it if you can't afford an ST!

Games are getting closer and closer to movies and *Brataccas* is a pretty big jump in the right direction.

Things are looking up — the most interesting show for software in a long while.

Graham Taylor

Discover the Atari ST



Jeremy Vine's **Atari ST Companion** will tell you all you need to know if you're wondering whether to invest in the most talked-about new micro of 1985 — the Atari 520ST. Jack Tramiel's new wonder-machine offers you the "power without the price" — a 68000-based window, icon, mouse micro with the GEM graphics environment from Digital Research, all for £750.

The Atari ST Companion has been written with the benefit of full hands-on experience of the machine. Jeremy Vine begins with an overall look at the ST, followed by a detailed introduction to the GEM (Graphics Environment Manager) system. This offers facilities comparable with the much more expensive Apple Macintosh, including windows, pull-down menus and the facility to use a mouse to point to icons to replace typed commands.

Also covered is the Atari Intelligent Keyboard Controller, the very sophisticated sound system of the ST (which includes the industry-standard MIDI interface), the TDS operating system and the graphics LINE "A" interface.

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Reviews

Smash hit

Program *Now Games* **Micro** Spectrum 48K **Price** £8.95 **Supplier** Virgin Games

Warning! Do not confuse this with the chart-topping *Now That's What I Call Music* LP tape I have no idea whether it would be worse to play it through your Walkman or load The Thompson Twins into your Spectrum!

Strangeloop

This is however, the micro equivalent of those musical compilations and should prove to be a similar smash. First up is *Lords of Midnight*, an undeniable classic which,

Arabian Nights

if you don't already have it, probably alone makes this worth buying My only grumble is that you need a magnifying glass to read the map of *Midnight* once it's reduced to standard cassette-box size

As the arcade adventure has been the favourite genre of the past decade (or so it seems) it's not surprising to find four of them here *Brian Bloodaxe* shows most familial resemblance to his alliterative relative, the *Manic Miner*, while *Strangeloop* adds to the complexity and includes a lot of shooting *Arabian Nights* seems to be more about pre-planning and careful timing, while *Pyjamarama* marked the second appearance of Wally Week, trapped in a nightmare These games prove that there is variety within the type and while I distinctly preferred two of them, none can actually be called bad.

Lords of Midnight

Falcon Patrol II, a shoot 'em up, is the only iffy offering, lacking the frills we expect today, though it makes a reasonable filler at this stage

Whether you rate this as highly as I do will depend on how many of the six you already have, I think the break even could come at the half-way mark and, if you're new to computing, you're laughing

One complaint about the package as a whole, though the programs loaded at several different volume levels which is downright inconvenient. I hope it was a one-off flaw

John Minson

No frills

Program *Mordon's Quest* **Micro** Spectrum **Price** £6.95 **Supplier** Melbourne House Castle Yard House, Castle Yard, Richmond TW10 6TF

'The *Classic Adventure* continues,' says Melbourne House, which it does in the sense that *Mordon's Quest* is by the same author It's also a sequel in style to its predecessor

Traditional values are the order of the day here There are no pictures but the descriptions paint far more vivid scenes in a jungle the light shines through the high trees and water drips from broad leaves on to a mossy carpet. A neatly justified, reduced typeface avoids too much scrolling A pity, though, that the absence of frills goes so far as no keyboard click

The richness of the descriptions stops the lateral thinking involved in the many puzzles looking like a mere succession of intelligence tests and the vocabulary seems broad enough to avoid that curse of the adventurer, Thesaurus thumb I wasn't too sure about this world's location with its ancestral pile in a jungle, but the pleasing humour and urgency of the quest kept me fully occupied. And I'm delighted to report that I've not yet seen hide nor hair of an elf!

Definitely one for the traditionalists then, but I also suspect that it will seduce those who've only gone for memory consuming illustrations in the past.

John Minson

Decision time

Program *Decision Maker* **Micro** QL **Price** £39.95 **Supplier** Sinclair Research, 25 Willis Road, Cambridge CB1 2AQ

The famous renaissance philosopher Liebnitz reckoned the chances of throwing two coins and having both come up heads as 1:3

Since this shaky start, probability theory and statistics have progressed to become a useful and widely applied way of thinking though they remain tricky territory for the unwary

In everyday life, and particularly in business, we continually weigh up the pros and cons of our response to problems If we decide on a particular course of action, we may expect a number of outcomes, some of which are more likely than others One can imagine further decisions made in response to these various outcomes, and the process continuing This is the idea of a decision tree

In business the aim of the game is to make decisions that pay off in money terms So the final consequences can be given monetary values The task is to move up the tree making decisions to get to the end of the most profitable branch Except that if a very unlikely event is necessary to reach the maximum payoff, it may be wise to try for something less profitable but more likely Decision analysis solves the tree by identifying the course of action that would (if repeated in trial after trial) tend to give the best return in the long run

The weak part of the method must be one's assessment of the likelihood of the various outcomes throughout the decision tree Fortunately, with a computer and a well designed program, estimates can easily be varied and the effect seen.

This then is another advanced management technique made widely accessible by Triptych As is to be expected with this sort of material, *QL Decision Maker* contains a textbook and teaching program to ensure users thoroughly understand what they're doing The explanations of EMV, EVSI and Bayes theory are clear with plenty of exercises.

The decision tree is constructed in one half of the screen by specifying the decisions, the actions chosen, the chances of events happening, and their outcomes Such data is easily altered during and after input, using a smaller detail window Other windows are used to show prompts and define the function keys Decisions are made between up to five actions, and events can have up to five outcomes The manual explains how to overcome these constraints and the constraint on the size of the tree of 149 nodes, should it be necessary

All reports can be printed to an Epson RX or FX compatible printer The main report is the decision tree itself, together with EMVs Detailed print-outs of any part of the tree can be obtained. A risk profile is given, so that one can plan to avoid unacceptable risks

As is usual with microdrive QL software, file handling and medium formatting can be done from within the program

User friendly, powerful and educational, this program should find many users wherever complex risky decisions with financial consequences are taken

John Sucher

Enigmatic

Program *Nightshade* **Micro** Spectrum **Price** £9.95 **Supplier** Ultimate Play the Game, The Green, Ashby-de-la-Zouch, Leics

We always expect something special from Ultimate, whose brilliantly detailed graphics, 3-D animation and complex programming never fail to bring the best out of the Spectrum. Perhaps it's asking too much that every game should be an improvement on the last. In the case of *Nightshade*, it's possible to see why Ultimate thinks it's an improvement on *Alien 8* or *Knightlore*, the backgrounds are much more detailed, representing a Tudor village afflicted by all kinds of cleverly-designed and amusing demons, plagues and bacteria. As your animated adventurer steps into each building, the walls dissolve to show the inside.

The game falls down though, because, despite having most of the usual Ultimate elements – good packaging, enigmatic gameplay, good sound effects and music – what's disappeared is the element of interaction.

All the interiors of the buildings are featureless squares, there are no objects you can use or move, just floating weapons to collect and baddies to shoot at or avoid. Although there are some good effects – such as your man changing colour when infected by disease, running faster on finding secret potions, and so on – it all seems rather pointless without that vital involving element.

Although there's a much greater element of zapping than in previous games, there's also a good deal of strategy involved in finding your way around the village, discovering which weapons work on which demons, and so on.

Still, the game's ahead of nearly everything else for the Spectrum, but it would have been nice if the much vaunted "Filmation 2" had turned out to be something more than pretty backgrounds.

Chris Jenkins

Own language

Program *The Hobbit* **Micro** BBC disc drive **Price** £17.95 **Supplier** Melbourne House, Castle Yard House, Castle Yard, Richmond, Surrey

The Hobbit has been around for some time but for BBC micros it has been text-only until this disc version appeared.

On first running, the game prompts you to insert a blank formatted disc which becomes the picture disc. You follow the prompts and much copying from master-disc to picture-disc ensues. Once you have done all this you can begin.

Pressing the space-bar toggles between pictures and text. The pictures start appearing rather nicely but are disappointing – still, it's nice to have them. The text is much fuller than the BBC cassette version – which is great.

The game is, of course, based on Tolkein's book and it helps to know the book well. The game doesn't always understand familiar adventuring words but uses 'Inglish' – its own language – and to an extent you can actually talk to the characters. They may or may not answer! Most directions can be entered with a simple 'N', 'S' etc or even using the BBC's arrow keys. Gandalf – the wizard – has a mind of his own and can be infuriating. When asked for food he replied, "No!" – but gave me some anyway. Just as well too, because if you don't eat in this game you starve to death. As with most adventures it helps to draw a map. You can then avoid dangerous points.

The game can be saved at any stage and restarted when you next get going.

If you haven't already got *The Hobbit* and you do have discs then this is the version to get. You'll have endless hours of fun for your money. Users of Watford's double density disc filing system beware – it isn't compatible.

Dave Watterson and Michael Reid

Balanced

Program *Dragontorc* **Micro** Amstrad **Price** £7.95 **Supplier** Hewson Consultants, 56B Milton Trading Estate, Milton, Abingdon, Oxon

Here comes the sequel to *Avalon*, and for the first time at last Amstrad owners can sample one of Hewson's finest pieces of software to date.

Although *Dragontorc* hasn't been converted by Steve Turner, the original author, it is, nevertheless, as faithful, if not better, a reproduction than the original Spectrum version.

Once again, our hero Maroc the Mage, fresh from defeating the Lord of Chaos, is set another task. That of outwitting Morag the Shapeshifter in search of the five crowns of Britain. The program is very much an arcade/adventure being entirely visual and joystick driven, with many locations to explore, problems and tasks to complete and over 80 creatures to meet, battle and trade with, in order to collect the various spells needed to solve the game.

Obvious comparisons will be made with *Dun Darach* and *Tir Na Nog*, also billed as adventure movies, and graphically they are superior. However, *Dragontorc* is in some ways more playable and the problems, although very complex at the end, are nicely balanced at the start, allowing you to at least become familiar with Maroc's strange world.

I always felt the Spectrum version was slightly spoiled by bad flicker as Maroc moved through his pseudo 3D world, but this has all but solved that problem.

Andy Moss

Force fields

Program *Cylu* **Micro** Spectrum 48K **Price** £2.50 **Supplier** Firebird Software, Wellington House, Upper St Martin's Lane, London WC2H 9DL

While the world waits with bated breath for the new Ultimate games (and turns blue while they're delayed) what should appear, *sans* fanfare, but a new offering from Firebird, and it's a *Knight Lore* type game at a quarter the price of the Ashby-de-la-Zouch masterpiece!

Unless you're a total newcomer to Spectrum gaming, you'll know that this means a 3-D maze with overhead view and a multitude of screens — 200 in all, I believe, and no, I've not counted them all because the maze makers kindly installed force fields, just in case it all got too easy.

Still, if you insert the correct chip into the maze's central computer, a barrier can be cancelled, and these chips are to be found lying around all over the place. This proves that however clever you are as a maze designer, unless you're also tidy, your efforts will count for nothing.

The place is somewhat untidier than the *Popular* office in fact, with all sorts of other potentially useful goodies to be picked up. Priority goes to fuel pods, though, because despite your neat little body and clicking walk, you consume fuel faster than the Virgin Atlantic.

Actually this rate of energy loss is rather too swift for comfort, and using the turn keys can be a bit tricky too. The whole game with its handful of keys can take some getting into, but persevere and this neat little program will become as addictive as its more elaborate – and expensive – big brothers.

John Minson

Word games

Program *Wizard and the Princess* **Micro** Commodore 64 **Price** £12.95 **Supplier** All American Adventures, Unit 10, Fortiway Industrial Centre, Birmingham B7 4LY

I first saw this adventure on an Apple Computer about three years ago and at that time its style was quite innovative being mainly graphic screens with just a small amount of text. Unfortunately it hasn't worn well over the years and now looks extremely dated indeed.

The plot concerns the usual dreadful wizard who has kidnapped the fair princess and taken her to his castle beyond the Great Mountains. Beginning the adventure in the village of Serenia, you have to find and defeat the wizard and rescue the princess.

The problem here is that most clues are contained in the screen images giving the player no idea what words the computer will understand, indeed only two word inputs are accepted – a sure sign of age. I don't believe statements like *"Go Cave, Look Tree, etc."* enhance the atmosphere one bit. A good adventure will let you roam around for a while before hitting you with your first problem, letting you get a feel for the story and providing some descriptive elements for your imagination. *Wizard and The Princess* throws you into a puzzle from your first move making the whole thing frustrating.

If you enjoy playing word games with the program's limited vocabulary and have all the patience in the world, it's worth getting, but, as adventures go, this one doesn't anymore.

Andy Moss

Sketched out

Program *The Artist* **Micro** Spectrum 48K **Price** £8.95 **Supplier** SoftTechnics, 12/13 Henrietta Street, London WC2

There's almost a glut of graphic packages for the Spectrum, and newcomers face stiff opposition.

So what has *The Artist* got that the others haven't? It's rather easier to ask what it hasn't got — I only noticed the absence of rubber-banding for line drawing.

What it does have going for it is stunning ease of use. It's almost completely menu driven, with many single strokes giving way to further menus. This results in a logical approach to picture-making and the illustration of the various options where possible, such as the patterns for fill, in the status panel.

The initial line-drawing is controlled by joystick or keys with eight directions. You choose brush width, pattern or character square, then use the fire button or a third key for invisible movement, drawing or erasing, which isn't as much of a handful as it sounds. The brush is 'intelligent' in that it speeds up if you keep the key depressed and I found it easy to sketch, even producing curves, though there are also good *Circle*, *Box* and *Arc* commands.

Next the *Fill* commands which provide both solid colour and a multitude of patterns and textures. Setting attributes is easily achieved with a chance to try out *Paper*, *Ink* and *Border* before committing yourself to a choice. At this stage it's worth mentioning that pressing 'O' means that the picture is okay until that stage, pressing 'U' undoes everything from the previous 'O' or fill, which encourages experimentation.

Cutting and pasting is a crucial part of traditional graphic design and the movement and manipulation of blocks of screen is again easily accessed and can be previewed.

You can slide a section of picture around the screen, invert it, mirror it, even squeeze and stretch it, before putting it in its final position. This last option makes ellipses very simple.

Finally there's the text mode, with a selection of typefaces including reduced, though if you're really looking for something personal these can be redefined, and there's the UDG designer. This is one of the best I've seen, and its block of nine graphics means that characters larger than one square can be constructed without too many hassles.

All that remains is to praise the clarity of the instructions which are packed with examples. There's even a tape compressor on the reverse side of the tape and SoftTechnics will make colour screen dumps from your artwork if you cross their palms with silver.

The package is more than good — it's fun to use. It may not make you an artist, but at least you won't be able to blame the mechanics of producing pictures for interfering with your free imagination.

John Minson

Shuffle

A taste of Eastern promise on the Commodore 64 written by Mark Gornall

Shuffle is based on the old game where a bead is placed under one of three up-turned half shells, the shells are swapped around and the player has to choose under which shell the bead is hidden *Shuffle* is the modern equivalent of this game, with pyramids as the shells and a cube as the bead. But it is the computer who shuffles the pyramids around and your job as the player is to choose the pyramid where the cube is hidden.

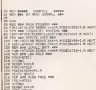
If you choose the correct pyramid you win ten droenas (the currency), if you choose the wrong pyramid you lose ten droenas You win the same when you have one hundred droenas and you lose the same when you have no droenas Keys one, two and three are used to choose the pyramid where you think the cube is hidden

The program is written entirely in machine code, but can be entered by running the Basic program. Since there is a lot of data to enter, I have included a checksum to cut down on errors, but I would also suggest saving the Basic program before running it, since a mistake in the machine code could result in a fatal crash

Once you have run the program (and saved it), you could just save the machine code using a monitor I would suggest saving from $CDDD to $CFFF, since the program and all the data (scroll, sprites, etc) are contained within these addresses, and when you want to run the machine code again just type Sys49152

Rem statements are included for clarity and may be omitted when entering the program.





```
10 REM ***** SHUFFLE *****
20 REM *** BY MARK DORNALL ***
30
40 K=0
50 REM *** MAIN PROGRAM ***
60 FORI=0TO1479 READA K=K+A POKE49152+I,A NEXTI
70 REM *** INTERRUPT ROUTINE ***
80 FORI=0TO58 READA K=K+A POKE52736+I,A NEXTI
90 REM *** SPRITE DATA ***
100 FORI=0TO140 READA K=K+A POKE32480+I,A NEXTI
110 FORI=0TO447 READA K=K+A POKE50688+I,A NEXTI
120 REM *** SCROLL DATA ***
130 FORI=0TO255 READA K=K+A POKE51712+I,A NEXTI
140 REM *** LOW FREQ ***
150 FORJ=0TO11
160 N=16*J
170 READA K=K+A
180 FORI=0TO15
190 POKE51968+N+I,A
200 NEXTI NEXTJ
210 REM *** HIGH FREQ ***
220 FORI=0TO11
230 N=16*J
240 READA K=K+A
250 FORI=0TO15
260 POKE52224+N+I,A
270 NEXTI NEXTJ
280 REM *** WIN ***
290 FORI=0TO4 READA K=K+A POKE51456+I,A NEXTI
300 FORI=0TO4 READA K=K+A POKE51904+I,A NEXTI
310 REM *** LOSE ***
320 FORI=0TO27 READA K=K+A POKE51500+I,A NEXTI
330 FORI=0TO27 READA K=K+A POKE51616+I,A NEXTI
340 IFK=266682THENSYS49152
350 PRINT "DATA ERROR" END
360 DATA 169,0,32,210,255,169,147,32,210,255,160,[illegible]
370 DATA 32,208,162,0,169,0,157,0,40,232,224,[illegible]
380 DATA [illegible]
...
1860 DATA [illegible]
```

Standard deviation

Statistical functions at your fingertips on the Spectrum 48K from ***Robert Kirtland***

This program performs various statistical functions on numerical data. If this is two variable data, in which one depends on the other as a linear relationship, but when plotted don't form a straight line due to experimental error, then the computer can work out the position of a line which best represents the relationship between them. However, if the data is less than perfect, then the position of this line depends on whether Y depends on X or X on Y. Therefore both lines are drawn, the X on Y one being the dotted line.

If it is one variable data, then it can be represented by a 3D histogram or a line graph. Due to the limitations of the screen size only 12 values can be displayed in these ways.

For both types of data, the computer will perform a statistical analysis. For single variable data this will only be the mean, variance and standard deviation. For two variable data the computer will calculate the mean, variance and standard deviation of each variable independently. It then goes on to print-out the lines of regression, covariance and correlation coefficient.

The correlation coefficient is an indication of how good the correlation between the two variables is. A value of one indicates a perfect correlation, and zero indicates no relationship. A negative coefficient indicates a negative correlation.

When the graphs are drawn the axes are automatically scaled with large values being displayed as values multiplied by a power of ten. However, negative values cannot be displayed. When a graph is drawn it can be copied to a printer by typing "C" or you can return to the menu by trying "M". This information would normally be printed on the screen but in this case there is simply no room.

```
  15 REM     STATISTICS
  20 REM    R.KIRTLAND
  25 REM
  30 CLS : LET F=0
  40 DIM M(2): DIM N(2)
  60 GO SUB 2500
  68 LET MU=0: LET T=0
  80 DIM Z(20): GO TO 9000
1000 REM INPUT DATA
1010 CLS : PRINT AT 0,7;"ENTER COORDINATES":AT 1,8;"TYPE <ENTER> TO END"
1020 DIM X(100): DIM Y(100)
1030 LET N=1: LET Y$="0"
1060 LET E=0
1100 INPUT "X-VALUE "; LINE X$: IF T THEN INPUT " Y-VALUE "; LINE Y$
1102 GO SUB 2500: IF ff THEN BEEP .5,0: GO TO 1100
1110 IF X$="" OR Y$="" THEN LET N=N+1: LET N=1: CLS : GO TO 3000
1120 LET X(N)=VAL X$
1130 LET Y(N)=VAL Y$
1140 LET N=N+1
1150 LET NX=(INT (N/20))*5+3
1160 LET NY=(N-(INT (N/20))*20)+2
1170 PRINT AT NY,NX;X$;+(",";Y$) AND T)
1180 LET B=B+2
1190 IF N-1=12 AND NOT T THEN CLS : LET N=N-1: GO TO 3000
1200 GO TO 1100
1300 DEF FN R(X)=(INT (X*100))/100
1500 CLS : PRINT AT 3,2;"STATISTICAL ANALYSIS OF DATA"
1510 PLOT 15,160: DRAW 225,0
1520 DRAW 0,-24: DRAW -225,0
1530 DRAW 0,24
1535 IF NOT T THEN GO TO 1600
1540 PRINT AT 6,2;"Lines of best fit:-";AT 7,10;"y=";FN R(m1);"x+";FN R(c1);AT 8,10;"x=";FN R(m2);"y+";FN R(c2)
1550 PRINT AT 10,2;"Mean of x:";FN r(xm);" of y:";FN r(ym)
1560 PRINT AT 12,2;"Standard dev. of x:";stx
1570 PRINT AT 13,2;"Standard dev. of y:";sty
1580 PRINT AT 15,2;"Variance of x:";stx^2
1590 PRINT AT 16,2;"Variance of y:";sty^2
1600 PRINT AT 18,2;"Covariance:";co
1610 PRINT AT 20,2;"Correlation coeff :";r
1650 LET T$=""
1700 PRINT #1;"COPY  OR  MENU"
1710 IF INKEY$="M" OR INKEY$="m" THEN RETURN
1720 IF INKEY$="C" OR INKEY$="c" THEN COPY : LPRINT :" ":T$: RETURN
1730 GO TO 1710
2000 LET XS=0: LET YS=0
2010 LET XMAX=0: LET YMAX=0
2050 LET XYS=0
2060 LET X2S=0: LET Y2S=0
2070 LET M=N: LET MU=M
2100 FOR N=1 TO M
2110 LET XMAX=(X(N) AND X(N)>XMAX)+(XMAX AND X(N)<=XMAX)
2120 LET YMAX=(Y(N) AND Y(N)>YMAX)+(YMAX AND Y(N)<=YMAX)
2150 LET XS=XS+X(N)
2160 LET YS=YS+Y(N)
2170 LET XYS=XYS+X(N)*Y(N)
2180 LET X2S=X2S+X(N)^2
2190 LET Y2S=Y2S+Y(N)^2
2200 NEXT N
2210 LET XM=XS/M: LET YM=YS/M
2220 LET STX=(SQR (X2S/M-XM^2))+1E-6
2225 IF NOT T THEN GO TO 2600
2230 LET STY=(SQR (Y2S/M-YM^2))+1E-6
2240 LET R=(XYS/M-XM*YM)/(STX*STY)
2250 LET M1=R*(STY/STX)
2260 LET C1=YM-M1*XM
2270 LET M2=R*(STX/STY)
2280 LET C2=XM-M2*YM
2290 LET CO=(XYS-(XS*YS/M))/(M-1)
2400 RETURN
2500 LET ff=0
2505 FOR j=1 TO LEN x$
2510 IF CODE x$(j)>57 OR CODE x$(j)<46 THEN LET ff=1
2520 NEXT j
2530 FOR j=1 TO LEN y$
2535 IF CODE y$(j)>57 OR CODE y$(j)<46 THEN LET ff=1
2538 NEXT j
2540 RETURN
3000 REM PLOT GRAPH
3005 CLS : LET M=XMAX: GO SUB 3900
3010 LET XV=V: LET XMAX=M: LET SX=180/XMAX
3015 LET M=YMAX: GO SUB 3900
3020 LET YV=V: LET YMAX=M: LET SY=160/YMAX
3030 GO SUB 7900
3050 PLOT 47,9: DRAW 0,163
3060 PLOT 44,12: DRAW 163,0
3070 FOR J=12 TO 172 STEP 8: PLOT 47,J: DRAW -2-2*((INT ((J-12)/16))=((J-12)/16)),0: NEXT J
3080 FOR J=47 TO 207 STEP 8: PLOT J,12: DRAW 0,-2-2*((INT ((J-47)/32))=((J-47)/32)): NEXT J
3100 FOR J=1 TO MU
3110 LET X=X(J): LET Y=Y(J)
3120 LET X=X*SX+47: LET Y=Y*SY+12
3130 PLOT X-2,Y-2: DRAW 4,4
3140 PLOT X-2,Y+2: DRAW 4,-4
3150 NEXT J
3160 LET C=C1*SY: LET M=M1/SX*SY: GO SUB 3190
3162 IF ABS M>.95 THEN RETURN
3170 LET C=C2*SX: LET M=M2/SY*SX: GO SUB 3190: RETURN
3180 LET N=1
3200 IF C>0 AND C<160 THEN LET M(N)=0: LET N(N)=C: LET N=N+1
3210 IF 160*M+C>0 AND 160*M+C<160 THEN LET M(N)=160: LET N(N)=160*M+C: LET N=N+1
3220 IF -C/M>0 AND -C/M<160 THEN LET M(N)=0: LET N(N)=-C/M: LET N=N+1
3230 IF (160-C)/M>0 AND (160-C)/M<160 THEN LET M(N)=160: LET N(N)=(160-C)/M: LET N=N+1
3240 PLOT M(1)+47,N(1)+12
3270 DRAW M(2)-M(1),N(2)-N(1)
3300 RETURN
```

```
3400 FOR J=0 TO 160 STEP 2
3410 LET a=H+J*C: IF a>160 OR a<0 THEN
GO TO 3430
3420 PLOT a+47,J+12
3430 NEXT J
3450 RETURN
3600 LET XP=INT (LN (XMAX/XV)/LN 10)
3690 LET YP=INT (LN (YMAX/YV)/LN 10)
3650 LET I=0
3700 FOR J=20 TO 0 STEP -2
3710 PRINT AT J,3; OVER 1;I
3720 LET I=I+YV
3730 NEXT J
3740 LET I=0
3750 FOR J=8 TO 30 STEP 4
3760 PRINT AT 21,J; TAB 1;I
3770 LET I=I+2*XV
3780 NEXT J
3790 IF XP=1 THEN GO TO 3810
3800 PRINT AT 21,27;" ";XP-1
3810 IF YP=1 THEN GO TO 3830
3820 PRINT AT 0,0;YV*10;" ";YP-1;" " A
ND (LEN STR$ (YP-1))=1)
3830 GO SUB 4000
3999 GO TO 1710
4000 LET M$=STR$ M
4010 FOR J=1 TO LEN M$
4030 IF M$(J)<>"." AND M$(J)<>"0" THEN
GO TO 4060
4040 NEXT J
4060 IF M$(J)="0" THEN LET M$="0"+M$: L
ET J=J-1: LET V=1: GO TO 5300
4070 LET V=(VAL M$(J))+1
4080 LET M$(J)=STR$ V
4100 LET H=J+1
4110 FOR J=H TO LEN M$
4120 IF M$(J)<>"." THEN LET M$(J)="0"
4130 NEXT J
4140 LET M=VAL M$: RETURN
4200 IF M$(J-1)="." THEN LET M$(J-2)="1
": GO TO 4400
4310 LET M$(J-1)="1": LET H=J
4330 GO TO 4110
4400 LET H=J-1: GO TO 4110
4800 PRINT AT 3,26;"M MENU";AT 5,26;"C C
OPY"
4810 RETURN
5000 REM HISTOGRAM
5010 CLS
5100 LET XMAX=0
5105 FOR J=1 TO NU
5110 IF X(J)>XMAX THEN LET XMAX=X(J)
5120 NEXT J
5130 LET M=XMAX: GO SUB 4000: GO SUB 3600
0
5140 LET XMAX=M: LET SY=160/XMAX: LET YV
=V: LET YP=INT (LN (XMAX/YV)/LN 10)
5150 FOR J=1 TO NU
5160 LET Z(J)=X(J)*SY: NEXT J
5170 INPUT "Do you want months on x-axis
? ";w$
5175 GO SUB 7500
5180 LET W=(w$="y")+(w$="Y")
5190 LET D$="JFMAMJJASOND"
5200 PLOT 55,9: DRAW 0,163
5210 PLOT 52,12: DRAW 175,0
5220 FOR J=12 TO 172 STEP 8: PLOT 55,J:
DRAW -2-2*((INT ((J-12)/16))=((J-12)/16)
),0: NEXT J
5230 FOR J=60 TO 227 STEP 16
5240 PLOT J,12: DRAW 0,-3
5250 NEXT J
5260 LET I=0
5270 FOR J=20 TO 0 STEP -2
5280 PRINT AT J,6;I
5290 LET I=I+YV: NEXT J
5295 LET I=1
5300 FOR J=7 TO 7+(NU-1)*2 STEP 2
5310 PRINT AT 21,J;(STR$ I AND NOT W)+(D
$(I) AND W)
5320 LET I=I+1: NEXT J
5330 IF YP=1 THEN GO TO 5360
5350 PRINT AT 0,0;YV*10;" ";YP-1;" " A
ND (LEN STR$ (YP-1))=1)
5390 IF L THEN GO TO 7000
5400 FOR J=1 TO NU
5410 PLOT 39+16*(J-1),12
5420 DRAW 0,Z(J): DRAW 16,0
5430 DRAW 0,-Z(J): DRAW -16,0
5440 DRAW 0,Z(J): DRAW 8,0
5450 IF Z(J+1)>Z(J) THEN GO TO 5500
5460 DRAW 16,0: DRAW -8,-6
5470 DRAW 0,6: IF Z(J)<>Z(J+1) THEN DRA
W 0,Z(J+1)-Z(J)
5480 IF J=NU THEN DRAW -8,-6
5490 GO TO 5800
5500 DRAW 8,0
5800 NEXT J
5900 GO TO 1710
6000 PRINT AT 0,2;"Mean is ";w$
6010 PRINT AT 11,2;"Variance is ";s*x^2
6020 PRINT AT 14,2;"Standard dev. is ";s
x
7100 GO TO 1700
7110 PLOT 55,Z(1)+12
7120 FOR J=2 TO NU
7130 DRAW 16,Z(J)-Z(J-1)
7140 NEXT J
7200 GO TO 1710
7500 INPUT "X-axis title,max 30 chars ?
";t$
7510 IF LEN t$>30 THEN GO TO 7500
7520 INPUT "Y-axis title,max 18 chars ?
";h$
7530 IF LEN h$>18 THEN GO TO 7520
7540 FOR j=1 TO LEN h$
7550 PRINT AT j+1,0;h$(j)
7560 NEXT j
7570 PRINT #1;" ";t$
7580 RETURN
9000 PRINT AT 2,7;"OPTIONS AVAILABLE"
9010 PLOT 51,164: DRAW 144,0
9020 DRAW 0,-17: DRAW -144,0
9030 DRAW 0,17
9040 PRINT AT 5,4;"1) ENTER 1 VARIABLE D
ATA"
9050 PRINT AT 7,4;"2) ENTER 2 VARIABLE D
ATA"
9060 PRINT AT 9,4;"3) STATISTICAL ANALYS
IS"
9060 PRINT AT 11,4;"4) DRAW SCATER PLOT
GRAPH"
9070 PRINT AT 13,4;"5) DRAW HISTOGRAM"
9080 PRINT AT 15,4;"6) DRAW LINE GRAPH"
9200 LET A$=INKEY$: IF A$="" THEN GO TO
9200
9210 IF A$="2" THEN LET T=1: GO SUB 100
0
9215 IF A$="1" THEN LET T=0: GO TO 1000
9220 IF A$="3" AND NU>1 THEN CLS : GO S
UB 1800
9230 IF A$="4" AND T THEN GO SUB 7000:
GO SUB 5000
9240 IF A$="5" AND NOT T THEN LET L=0:
GO SUB 5000
9250 IF A$="6" AND NOT T THEN LET L=1:
GO SUB 5000
9260 CLS : GO TO 9000
9500 FOR j=USR "a" TO USR "b"+7
9510 READ a: POKE j,a: NEXT j
9520 DATA 0,2,4,140,80,80,144,0
9530 DATA 0,90,181,146,146,148,90,0
9600 RETURN
```

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CHILTERN ELECTRONICS

Tracing the call

If you're having trouble debugging programs in SuperBasic, ***Simon Goodwin*** *has the solution*

Sinclair's SuperBasic is a mixture of standard Basic commands and structured statements derived from languages like Algol and 'C'. It does contain facilities to debug programs written in simple Basic, but very little for those who want to test programs which use procedures and functions.

However, now help is at hand, in the shape of our 'structured debugging' commands, *Find* and *How Come*. One allows you to locate any procedure or function just by typing its name. The other traces through the procedure and function-calls at any point as a program is running. There's no longer any need to memorise line-numbers, or decorate your code with *Print* statements to keep track of the program flow.

The procedure presented here and next week have been tested over several months, on all versions of the QL. They've been used to develop complex, structured SuperBasic programs (sometimes over 2,000 lines, without a single *Go To* or *Go Sub*!) and they've saved many hours which would otherwise have been spent poring over listings.

Before we get to the procedures themselves, let's look at how SuperBasic programs are stored within the QL.

QL SuperBasic is organised very differently from the majority of micro Basics, which keep the program in a similar form to that produced by the *List* command. Here, statements are stored in memory much as they were entered, special values called 'tokens' are used to represent common words, such as *Print* and *Stop*, but the rest of the program is stored in textual form – just as a string is stored in memory. The QL uses a more complex system which is designed to cope with very large programs.

On a standard QL there is about 88K free for Basic, this figure can be increased to 600K without problems if add-on memory is fitted. Contrast this capacity with that of the IBM PC, which allows only 63K for Basic programs, even on a 640K machine. The Microsoft Basic used by IBM, and many other suppliers, is based on a program written in 1977, when 64K was considered an enormous amount of memory.

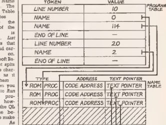
Microsoft keep data in a small group of tables. This system works very well for small programs, but it becomes increasingly inefficient as programs get longer. Every time you refer to a variable in a Microsoft Basic program, the computer has to search through the table of names, one by one, until it finds the one you want. This doesn't take long in short 'benchmark' programs, but it can take ages when programs get large – perhaps half the execution time in a 40K program.

The QL scheme is rather different. Names in a QL program are not stored in their text form, but as index numbers. Each number corresponds to an entry in an index for every name – the Name Table. In turn, that table contains numbers which indicate the position of the text of the name and its value, within two more tables. The 'type' of each name – function, string or whatever – is also stored in the Name Table.

Figure 1 shows the storage of a two-line program: **10 PRINT number 20 STOP**. The first 114 entries in the Name Table describe procedures and functions built-in to the QL, we've only listed the first three of these.

At times this just makes life more complicated. When the computer *Lists* a program it finds the index numbers and must look them up in the Name Table. The Name Table indicates where the text of the name is stored. *List* outputs that text and carries on. Microsoft Basic just spits out the characters as it finds them.

When you come to *Run* your program, however, the QL scheme begins to make sense. As names are found, they can be looked up directly in the Name Table. There's no need to search the table from the start, since the details of each name occupy a fixed amount of space. You can take the index number, multiply by that fixed amount, add the start address of the table and the details are at your finger tips (or, at least, your digits!). The entry in the Name Table tells you exactly where to go to find the correct data.



Microsoft Basic has to search through its list from the start, because it stores names in text form and keeps the values and names muddled together in one big list. Different types of variable need different amounts of storage, so Microsoft can't just go directly to the correct entry: a slow, painstaking search is needed.

The QL keeps values jumbled up as well, but it can find them quickly by using the Name Table as a kind of intermediate index. The Name Table and the variable values are kept apart, so that entries in the Name Table are always the same size. The text for each name is only stored when the name is first typed, so you can use long, readable names in your programs without wasting memory. Thereafter, names are just stored as index numbers within the program.

So much for the theory – next week the practice, with *Find* and *How Come* program notes and listing.

Part of the process

A useful mini-wordprocessor for the BBC B from the keyboard of ***M Smith***

Wordway is a tape-based mini-wordprocessor written in Basic for the BBC Model B. It supports a 66 line page of 80 column text with an 80 column display. The features within the program include Text Entry, Text Editing, Saving To or Loading From Tape, a simple form of Justification with a Preview Mode and of course Printing. It is not in the same league as Rom-based wordprocessors, but it is easy to use and gives good results.

Text Entry: *f1* – opens Entry Mode, *f2* – closes Entry Mode. *Tab* indents your paragraphs. Press *f1*, type in your text using *Tab* to indent each paragraph (if you so want) and using *Return* to close each paragraph. Do not worry about the line endings as these will be sorted out when you print your text and you can preview the effect before printing. If you are preparing lists or forms that must appear as entered you will be able to print these in your selected format.

Editing: *f3* – opens Edit Mode, *f4* – closes Edit Mode, *f5* – to Insert, *f6* – to Delete, *f7* – to Overwrite, *f7* then *f8* – to Split a Paragraph, *f9* – to Jump. Use the cursor keys to move the Editing Cursor to the required position on the page.

To Insert, position the cursor at the space into which you wish to insert and press *f5*. You will be asked to wait for space to be created and the screen will clear. Type in your new letter, word, sentence or paragraph (if paragraph close it with Return) press *f2* and wait for the computer to sort out your text.

To Delete, position the cursor under the first letter or space you wish to Delete, press *f6* and then press *Copy*, move the cursor to the last letter or space and press *Copy* again. Wait while the offending passage is removed. If you are removing a single letter or space position the cursor and press *Copy* twice. Do not use Delete if Overwrite will do the same job as Overwrite is faster.

To Overwrite, position the cursor under the first letter or space you wish to overwrite, press *f7*, type in your alteration taking care not to go past the end of the line. Press *Return* when finished or at the line end and the change is made.

This week part of the listing – next week the remainder plus more instructions. Meanwhile, if you find the idea of typing it all in a bit daunting I can send you a copy on tape for £3.00 (disc £5.00) and a 17p stamp. Write to M Smith, Gwylfa, Llangadfan, Welshpool, Powys SY21 0NW.

```
   0FORI%=0TO3STEP3:P%=TOP+50:[OPT 0
  10.start LDY #0:.loop LDA (&72),Y:STA
(&70),Y:LDA&73:CMP &61:BNE ok:TYA:CMP &8
1:BNE ok:RTS:.ok INY:BNE loop:INC &71:IN
C &73:JMP loop
  20]:NEXT:GOTO 1470
  30CLEAR
  40MODE7:PRINTTAB(11,7)CHR$141"WORDWAY
",TAB(11,8)CHR$141"WORDWAY",TAB(16,9)"O"
,TAB(16,10)"R",TAB(16,11)"D",TAB(16,12)"
WORDWAY",TAB(16,13)"A",TAB(16,14)"Y  M.S
MITH  1985":PROCD(300)
  50MODE3:HIMEM=&2ACF:CU=8:HP=40:OHP=HP
:S=0:T1=1:M=10960
  60*FX225,148
  70*FX226,148
  80PROCC
  90PROCH:ONERRORGOTO1080
 100G=GET
 110*FX4,0
 120IFG=149PROCPR:PROCEN:GOTO90
 130IFG=151PROCED:GOTO90
 140IFG=153PROCS:GOTO90
 150IFG=154PROCL:GOTO90
 160IFG=148PROCCH:GOTO90
 170IFG=156CLS:PRINTTAB(20,5)"IF THE DI
SPLAY STOPS PRESS THE SHIFT KEY":PROCD(2
00):CLS:VDU14:PROCJ:VDU15:PRINTTAB(26)"P
RESS ANY KEY":G=GET:GOTO90
 180IFG=155PROCPT:GOTO90
 190GOTO100
 200DEFPROCEN
 210G=GET
 220IFM>16239ENDPROC
 230IFG=127 M=M-1:VDU127:GOTO210
 240IFG=9PROCI:GOTO210
 250IFG=13ANDM MOD80<>0FORP=M TOM+(79-(
M MOD80)):?P=4:PRINTCHR$32;:NEXT:M=M+(80
-(M MOD80)):GOTO290
 260IFG=13ANDM MOD80=0FORP=M TOM+79:?P=
5:PRINTCHR$32;:NEXT:M=M+80:GOTO290
 270IFG=150ENDPROC
 280PRINTCHR$G;:?M=G:M=M+1:GOTO210
 290IFM<16240GOTO210ELSEENDPROC
 300DEFPROCPR:CLS:P=10960
 310IF?P=4OR?P=5 PRINTCHR$32;:GOTO330
 320PRINTCHR$?P;
 330P=P+1:IFP<M GOTO310 ELSEENDPROC
 340DEFPROCED:M1=10960:VDU23,1,0;0;0;0;
 350CLS:PRINTTAB(0,0)"f5.TO INSERT LETT
ER, WORD OR PARAGRAPH...f6.TO DELETE LET
TER, WORD OR PARAGRAPH",TAB(8,2)"f7.TO O
VERWRITE...f7.THEN f8.TO SPLIT A PARAGRA
PH...f9.TO JUMP"
 360PRINTTAB(0,4)"USE CURSOR KEYS TO PO
SITION CURSOR....f4.TO LEAVE EDIT MODE..
..ESCAPE TO ABORT":PROCEP:*FX4,1
 370HP=40:OHP=HP
 380PROCPC
 390G=GET
 400IFG=136 HP=HP-1:IFHP<0THENHP=0
 410IFG=137 HP=HP+1:IFHP>79THENHP=79
 420IFG=138 M1=M1+80
 430IFG=139 M1=M1-80:IFM1<10960 M1=1096
0
 440IFG=138ORG=139PROCEP
 450IFG=153PROCPA:GOTO350
 460IFG=155PROCAL:GOTO380
 470IFG=157PROCJM:PROCEP:GOTO380
 480IFG=154PROCDL:PROCEP:GOTO380
 490IFG=152 VDU23,1,1;0;0;0;:ENDPROC
 500GOTO380
 510DEFPROCEP:VDU31,0,7:FORP=M1 TOM1+39
9
```

```
520IF?P=0OR?P=4OR?P=5PRINTCHR$32;:GOTO
540
530PRINTCHR$?P;
540IFP MOD80=79 VDU10
550NEXT:ENDPROC
560DEFPROCAL
570M2=M1+HP
580H=GET
590IFH=13ENDPROC
600IFH=156 H=4
610?M2=H:PRINTTAB(HP,CU-1)CHR$H:DHP=HP
:HP=HP+1:M2=M2+1:PROCPC:GOTO580
620DEFPROCPC:PRINTTAB(DHP,CU)CHR$32:PR
INTTAB(HP,CU)CHR$94:DHP=HP:ENDPROC
630DEFPROCC:CLS:PRINTTAB(17,12)"PLEASE
 WAIT  I'M BUSY CLEARING SPACE IN MEMORY
":D=10960:REPEAT:?D=0:D=D+1:UNTILD=16320
:M=10960:ENDPROC
640DEFPROCJ:A=10960
650B=0:A$=""
660X=?A
670IFX=0PRINTA$:ENDPROC
680IFX=4 A$=A$+STRING$(80-LENA$," "):P
RINTA$;:REPEAT:A=A+1:UNTIL?A<>4:GOTO650
690IFX=5PRINTSPC80;:B=1:REPEAT:A=A+1:B
=B+1:UNTIL?A<>5ORB=81:GOTO650
700B$=CHR$X:A$=A$+B$:A=A+1:B=B+1:IFB<>
80GOTO660
710C=80
720IFMID$(A$,C,1)=CHR$32GOTO730ELSEC=C
-1:GOTO720
730C$=MID$(A$,1,C-1):T$=MID$(A$,C+1,LE
NA$-C)
740E=LENC$
750IFMID$(C$,E,1)=CHR$32 C$=MID$(C$,1,
E-1):GOTO740
760IFLENC$<80PROCST
770PRINTC$;:A$=T$:B=LENA$:GOTO660
780DEFPROCST:D=LENC$
790IFLENC$<70 C$=C$+STRING$(20-LENC$,"
"):ENDPROC
800D$="":F$=""
810IFMID$(C$,D,1)=CHR$32GOTO820ELSED=D
-1:GOTO810
820D$=MID$(C$,1,D-1):F$=MID$(C$,D+1,LE
NC$-LEN D$-1)
830C$=D$+"  "+F$:D=D-1
840IFLENC$<>80GOTO800ELSEENDPROC
850DEFPROCD(TM):T=TIME
860IFTIME-T<TM THEN860ELSEENDPROC
```


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More demolition data

Your final helping of Smasher code for the Amstrad machines by A Williams

You can stop holding your breath now: at last – the remainder of the Smasher listing.

If your fingers don't feel up to all the work, I can supply a copy of the program if you send me a tape, your name and address and £1.00. Write to me at 122 Caledonian, Glascote Heath, Tamworth, Staffs, B77 2EH.

```
970 RESTORE 990
980 FOR I=1 TO 5:READ A$:X=4:Y=I*3+4:PEN 1:GOSUB 139
0:NEXT
990 DATA 1) CURSORS,2) JOYSTICK A,3) INSTRUCTIONS,4)
 KEYBOARD,5) PLAY THE GAME
1000 A$(1)="          .....  .......PRESS  5  TO START O
R 1-4 FOR OTHER OPTION "+CHR$(164)+"A.WILLIAMS 1985 G
UIDE YOUR BAT TO REFLECT THE BALL AND KNOCK OUT THE
BRICKS MANY THANKS TO FIONA FOR THE IDEA ALLAN FOR T
HE SOUND AND MARK FOR THE "
1010 A$(1)=A$(1)+"GRAPHICS OK U:S-E S        . . .
.. ..."
1020 A$(2)="          .   ...  THIS GAME IS HARD BU
T NOT AS HARD AS SOME JUST TRY AND GET A HIGH SCORE
THATS ALL WITH NO CHEATING    YOU GET A BONUS EVERY
 SCREEN ACCORDING TO YOUR CHOICE OF SKILL.       .
...  ...."
1050 PEN 2:LOCATE 1,22:PRINT CHR$(150);STRING$(39,15
4);CHR$(156):LOCATE 1,23:PRINT CHR$(149);STRING$(38,
32);CHR$(149);CHR$(147);STRING$(38,154);CHR$(153)
1060 A$(3)="          ...  ......     OTHER KEYS TO USE DU
RING GAME ARE LARGE ENTER=MUSIC ON/OFF     DEL=PAUSE
 ON     CLR=PAUSE OFF    ESC=QUIT              99
9 999       THIS .............................."
1060 FOR I=1 TO 3:FOR Y=1 TO LEN(A$(I))-36
1000 LOCATE 2,23:PEN 3:PRINT MID$(A$(I),Y,38)
1070 IN$=INKEY$:IF IN$="" THEN 1130
1080 IF IN$="1" THEN L1=8:R1=1
1090 IF IN$="2" THEN L1=74:R1=75
1100 IF IN$="3" THEN 1180
1110 IF IN$="4" THEN L1=71:R1=22
1120 IF IN$="5" THEN RETURN
1130 NEXT:NEXT
1140 A=1:FOR Y=1 TO 10:FOR T=1 TO 15:INK A,T:A=A+2:B
ORDER 1,100+T:4,1,15,4:IF A=0 THEN A=1
1150 NEXT:NEXT
1160 INK 1,6:INK 2,22:INK 3,2:INK 4,5:INK 5,24:INK 6
,24:GOTO 1190
1170 LOCATE 1,24:END
1180 REM INSTRUCTIONS
1190 MODE 0
1200 PRINT CHR$(22)+CHR$(1)
1210 PEN 1:X$=">>>>":X=1:Y=2:GOSUB 1390:PEN 4:X=5:X$
="INSTRUCTIONS":GOSUB 1390:X$="<<<<":PEN 1:X=17:GOSU
B 1390
1220 LOCATE 1,5:PEN 5:PRINT "GUIDE YOUR BAT TO   DEF
LECT THE BALL ANDKNOCK OUT THE BRICKSA BONUS IS GIVE
N   AFTER EVERY SCREEN                       IF USIN
G KEYBOARD   Z=LEFT        X=RIGHT"
1230 PEN 3:PRINT "LAYER    SCORE/BRICK
1240 PEN 4:PRINT " 1          2"
1250 PRINT " 2         4"
1260 PRINT " 3         8"
1270 PRINT " 4         10"
1280 PRINT " 5         12"
1290 X$="ANY KEY TO RETURN'''":X=1:Y=22:PEN 1:INK 0,
15:GOSUB 1390
1300 WHILE INKEY$<>"":WEND:WHILE INKEY$="":WEND
1310 GOSUB 1340
1320 FOR T=0 TO 25:ISCROLL,1,5,T,T+1,0,1,0:ISCROLL,5
,15,T,T+1,2,1,INT(T/2)
1330 ISCROLL,15,20,T,T+1,0,1,0:FOR F=1 TO 20:NEXT:NE
XT ISCROLL:GOTO 830
1340 RESTORE 1360:AD=&A814:FOR T=1 TO 107:READ A$:PO
KE AD,VAL("&"+A$):AD=AD+1:NEXT
1350 CALL &A814:RETURN
1360 DATA DD,7E,00,27 7E,00,CB,01,0C,C9,23,00 C5,2A,
40,53 43,52,4F,0C,CC,00,FE,00,40,20,FE,01,28,20,FE,0
7,C0,00,FE,00,00,4E,02,00,00,04,00,5E,06,00,6E,D9,00
,50
1370 DATA D6,23,86,0C,28,24,F5,E5,C5,F5,CD,50,0C,D1,
C1,E1,F1,00,C8,10,F1,DE,10,ED,03,20,4E,00,C5,CD,17,B
C,D0,C1,3E 00,04,01,3E,1B,6F,67,F5,79,FE,00,28,03,F1
,18,03,F1,C9,00,00,00,00
1380 REM BELOW CHAP
1390 LARGE=42239
1400 LOCATE X,Y:FOR ABC=1 TO LEN(X$):T1=LARGE+1+8*(A
SC(MID$(X$,ABC,1))-32)
1410 A1=PEEK(T1):A2=PEEK(T1+1):A3=PEEK(T1+2):A4=PEEK
(T1+3)
1420 A5=PEEK(T1+4):A6=PEEK(T1+5):A7=PEEK(T1+6)
1430 SYMBOL 248,0,A1,A1,A2,A2,A3,A3,A4
1440 SYMBOL 247,A4,A5,A5,A6,A6,A7,A7,0
1450 PRINT CHR$(248);CHR$(8);CHR$(10);CHR$(247);CHR$
(11);
1460 NEXT
1470 RETURN
1480 REM QUIT
1490 MODE 1:FOR T=1 TO 15:SOUND 4,0,1,15,0,0,T:BORDE
R RND*26:NEXT:BORDER 0
1500 X$="SHAME''":X=7:Y=1:PEN 1:GOSUB 1390
1510 X$="YOU GAVE UP AFTER,":X=2:Y=5:PEN 2:GOSUB 139
0
1520 X$="SCORING ":X=6:Y=10:PEN 3 GOSUB 1390 X$=STR$
(SC)+" POINTS":X=1:Y=14:PEN 4 GOSUB 1390:GOTO 1640
1530 REM LOSE A LIFE::
1540 LI=LI-1:IF LI=-1 THEN 1590
1550 BORDER 26:SOUND 133,100,150,15,2,2,25:FOR TI=1
TO 20:NEXT:BORDER 0
1560 X$=STR$(LI):PEN 0:X=16:Y=1:GOSUB 1390:LOCATE BA
LX,BALY:PRINT " "
1570 BALX=10:BALY=10:BALUD=1:LOCATE 5,15:PEN 3:PRINT
 "HIT A KEY'''":WHILE INKEY$<>"":WEND:WHILE INKEY$=
"":WEND LOCATE 5,15:PRINT STRING$(12," "):RETURN
1580 CLS:X$="GOOD LUCK YOU":X=4:Y=2:PEN 1:GOSUB 1390
1590 X$="PERISHED":X=6:Y=6:PEN 2:GOSUB 1390
1600 PEN 2:X$="AFTER SCORING ":X=3:Y=9:GOSUB 1390
1610 X$=STR$(SC)+" POINTS''":X=1:Y=12:PEN 4:GOSUB 13
90
1620 FOR T=1 TO 3600:NEXT
1650 GOSUB 2150
1640 X$="ANOTHER GO (YES/NO)?":X=1:Y=20
1650 PEN 5:GOSUB 1390
1660 IF INKEY(43)=0 THEN ERASE BRICK,A:GOTO 90
1670 IF INKEY(46)=0 THEN MODE 1:PEN 1:END
1680 GOTO 1660
1690 REM BACKGROUND MUSIC
1700 READ NOTE% DURATION%
1710 IF NOTE%=-999 THEN RESTORE 1750:GOTO 1700
1720 SOUND 1,NOTE%,DURATION%*3010,15,7
1730 RETURN
1740 REM DATA FOR MUSIC
1750 DATA 490,1,494,1,415,1,494,1,415,1,494,1,415,1,
494,1,494 1,415,1,440,.5,400,.5 349,.5,349,1,440,1,44
0,1,349,1,400,1,349,1,400,1,349,1,493,1 493,1,400,1,
391,.5,349 1,320,.5,320,2
1760 DATA 999,-999
1770 DATA
1780 REM HIT A BRICK
1790 IF X=4 THEN FOR T=1 TO 5:LOCATE BALX,BALY:PRINT
 " ":SOUND 2450:BBEY=BALY+1:BALUD=1-BALX=BALX:NEXT:RE
TURN
1800 IF BRICK(BALX,BBEY)=0 THEN RETURN
1810 GOSUB 1820:GOTO 1880
1820 IF BBEY=9 THEN SC=SC+2:SOUND 4,800,2,15:BRICKSC
=BRICKSC-2
1830 IF BALY=8 THEN SC=SC+4:SOUND 4,300,2,15:BRICKSC
=BRICKSC-4
1840 IF BBEY=7 THEN SC=SC+8:SOUND 4,000,2,15:BRICKSC
=BRICKSC-8
```

```
1850 IF BALY=6 THEN SC=SC+16:SOUND 4,300,2,15:BRICKS
C=BRICKSC-16
1860 IF BALY=5 THEN SC=SC+32:SOUND 4,100,2,15:BRICKS
C=BRICKSC-32
1870 RETURN
1880 BALUD=1
1890 BALX=INT(RND*10+1)
1900 IF BALY=3 THEN BALUD=-1:SOUND 4,200,2,15:BALY=4
1910 DEF FN A$=FILAR$(STR$(P2),(LEN(B)+2(PRLN))=1
1)
1920 PRIN=SC:X=PN X1:PEN 0:X=0:Y=1:GOSUB 1390:BRIC
KSC=BRICKSC-1
1930 IF BRICFUD=0 THEN 1970
1940 IF BRICKSC<=0 THEN 1970
1950 BRICK(BALX,BALY)=0
1960 RETURN
1970 REM NEW SCREEN
1980 BRICKSC=1280 LOCATE BALX,BALY:PRINT " "
1990 WINDOW #1,1,20,3,25:PAPER #1,0:CLS #1
2000 LOCATE B011,24:PRINT " ":PEN 7
2010 I$="BONUS":X=4:Y=8:GOSUB 1390
2020 T$=STR$(BONUS)+" "
2030 X=13:PEN 8:GOSUB 1390
2040 FOR P=BONUS TO 0 STEP -1
2050 SOUND 4,P,2,15
2060 PRIN=P:I$=STR$(P)+" ":X=12:Y=8:PEN 0:GOSUB 139
0
2070 PRIN=SC+1:SC=SC+1:I$=STR$(SC):X=7 Y=1:PEN 8:GOS
UB 1390:NEXT
2080 WINDOW #1,1,20,3,25:PAPER #1,0:CLS #1:BONUS=BON
US+10:DELAY=DELAY-10:IF DELAY<0 THEN DELAY=0
2090 IF BONUS>340 THEN BONUS=100:L=L+1
2100 FOR Y=1 TO 20:FOR Y=1 TO 20:BRICK(T,Y)=1:NEXT Y
,T
2110 FOR Y=1 TO 5:PEN T:FOR Y=1 TO 20:LOCATE Y,1+4:P
RINT CHR$(233):NEXT Y,T
2120 BALX=10 BALY=10:BALUD=1,BATX=10
2130 BRICKSB=120
2140 GOTO 600
2150 FOR TOP=1 TO 10:IF SC<HI(TOP) THEN NEXT:RETURN
2160 IF TOP<>10 THEN FOR T=10 TO TOP+1 STEP -1:NAME$
(T)=NAME$(T-1):HI(T)=HI(T-1):NEXT
2170 MODE 0 PAPER 2:PEN 1
2180 WHILE INKEY$<>"":WEND
2190 X=2:I$="CONGRATULATIONS!":Y=1:GOSUB 1390
2200 P$=STR$(SC):P$=LEFT$(P$,LEN(P$)-1)
2210 I$="YOUR ":PRIN=TOP
2220 A=TOP
2230 IF A=1 THEN I$=I$+" 1ST"
2240 IF A=2 THEN I$=I$+" 2ND"
2250 IF A=3 THEN I$=I$+" 3RD"
2260 IF A>=4 THEN I$=I$+STR$(A)+"TH"
2270 I$=I$+" HIGHEST"
2280 PAPER 0
2290 X=2 Y=8:PEN 3:GOSUB 1390
2300 LOCATE 2 13:PEN 4:PRINT "ENTER YOUR NAME "
2310 I$=STRING$(10 "-"):Y=24:X=5:GOSUB 1390
2320 NAM$=""
2330 FOR T=1 TO 10
2340 A$="":WHILE A$="":A$=UPPER$(INKEY$):WEND
2350 IF A$=CHR$(13) THEN T=10:GOTO 2380
2360 NAM$=NAM$+A$:X=X+4:Y=22:PEN 1:I$=A$:GOSUB 1390
2370 SOUND 1,2000,2,15
2380 NEXT
2390 NAME$(TOP)=NAM$:HI(TOP)=SC
2400 MODE 0:PAPER 0
2410 LOCATE 5,1:PRINT "HI-SCORES"
2420 FOR T=1 TO 10:PEN T:I$=NAME$(T):X=1:Y=T*2+1:GOS
UB 1390
2430 I$=STR$(HI(T)):X=13:GOSUB 1390
2440 NEXT:FOR T=1 TO 2000:NEXT:FOR T=1 TO 25:LOCATE
1,1:PRINT CHR$(11):NEXT:RETURN
2450 IF BRICK(BALX,BALY)=0 THEN RETURN
2460 GOSUB 1820
2470 PRIN=SC:PEN 0:I$=FN A$:X=0:Y=0:GOSUB 1390:RETU
RN
2480 IF INKEY$ THEN ON DA(1) GOSUB 1600
2490 RETURN
```


You can do it!

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a simple introduction for beginners

david lawrence & mark england

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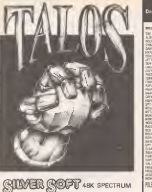
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Finders keepers

It seems that the gremlins have crept back into the column again and one of the first mistakes that I have to correct concerns *JSW II*

In addition to some letters on the subject, I have also had some messages from overwrought members of the Software Projects team who wanted to point out that, contrary to the letters we printed a few weeks ago, you can in fact take a ride on the yacht It's not surprising that so many people have got misled on this point because to succeed involves some very tricky gamesplay

Anyway my thanks go to Mark Whitaker and A Nonny Mouse (!) amongst others for explaining how it works – to ride the yacht you must trip switch and then get to the yacht to collect the object and the one in the bow without losing a life on the way! Then walk left and wait for your trip to the desert island. The switch has nothing to do with the cartography room – instead you find that every new room you enter makes a block appear in this location, hence the name, and you have to visit enough of the lower rooms before going here to make it possible Apologies to everyone concerned for barking up the wrong tree

I have also been supplied with info about two secret rooms that can only be entered by cheating with *Pokes* I will assemble these *Pokes* and some for the infinite lives on the Spectrum and MSX versions and print them in the column in a week or two

More urgently this week I want to clear up a couple of errors printed in the August 8th issue that dealt with *Finders Keepers* First of all I misread the name at the bottom of the letter and it should in fact have been credited to John Wilson of Rochdale rather than the mythical John Watson, secondly there were two errors in the program he sent in for reading hidden words in machine code programs – line 40 should be *If Peek F=32 Then Go To 70* and line 60 is *If Peek F=127 Then Go To 70*

Anyway there is good news for both John Wilson and John Watson in the form of this letter from David Jones, the very band responsible for all the sleepless nights *Finders* is giving gamesplayers everywhere

"As a regular reader of your column, I would like to offer some solutions to the problems posed by John W. First of all I would like to point out that the Rooms score was never intended to reach a total of 100 – I didn't think people would mind since many games put the % sign after numbers that never reach (or go beyond) 100. Having now had time to think about the game I have taken some time out to manufacture a few *Pokes* to increase the total room score to 100 – it works by rerouting the score routine to a new subroutine stored in front of the main code

"The problem with the mouse is an oversight on my part (sorry folks) but it will also be corrected and included within the game To get the new *Pokes* in, either *Merge* the old Basic header and edit it or enter a completely new one to produce the program below

"The program will load as before but will enable a 100% score, if you can work out how Have any of you hackers out there discovered my test routine that enables the player to go direct to any room? If not then I'll give you a clue, it requires three pokes to locations that are zero when you load the game "

If no one can crack his challenge in a few weeks we will print the answer

```
  10 CLEAR 26600  BEEP .1,1  BEE
P .1,2  BEEP .1,3  BEEP .1,4. BE
EP .1,5. PAPER 0: BORDER 0  INK
7. BRIGHT 1. CLS : PRINT BRIGHT
1, INK 7,AT 9,3,"FINDERS KEEPERS
 IS LOADING",AT 12,10,"PLEASE WA
IT"  PRINT AT 0,0,  LOAD ""SCREE
N$ . INK 0: PAPER 0: PRINT AT 0,
0,  LOAD ""CODE
  20 POKE 49779,4  REM mouse
  30 LET a=0  FOR i=26608 TO 286
69
  40 READ b  LET a=a+b: POKE i,b
  50 NEXT i
  60 IF A<>7424 THEN PRINT "DATA
 ERROR": STOP
  70 POKE 30777,205
  80 POKE 30778,192
  90 POKE 30779,111
 100 RANDOMIZE USR 26672
 110 DATA 14,50,206,235,111
 120 DATA 14,52,205,235,111
 130 DATA 14,53,205,235,111
 140 DATA 14,54,205,235,111
 150 DATA 14,55,205,235,111
 160 DATA 245,6,0,56,184,162,254
,22,32,2,6,4,241,128,33,193,161,
201
 170 DATA 246,6,6,33,66,256,126,
185,32,4,241,198,2
 180 DATA 245,35,16,245,241,201
```

David finishes his very welcome letter with some exciting news about a game I'm very much looking forward to "My new game will be out in about a month and is much more of an arcade/adventure than most games that claim the title It will be called *Spellbound* and is considerably more advanced than *Finders Keepers* "

To round up this week's column I've got a couple of tips for the BBC Simon Whitelegg and Tim Moll of Sheffield write concerning the excellent game *Revs* "On August 1st I achieved a lap record of 1 24 4 on the Silverstone circuit without cheating and Tim managed 1 24 5 Can anyone beat these times? We have also discovered a way of qualifying with times as low as 58 seconds Start the qualifying lap as usual but just before the Becketts corner stop, turn the car through 180 degrees and drive back down the course to pass the starting flag again. Then brake the car, reverse back over the flag and it is recorded as a valid qualifying time "

Now then, in response to many pleas for help, David Noble of Bexleyheath has kindly sent in a complete solution to the game *Castle Quest*. The problem I face in giving answers to your specific queries is that they are very complicated and may not work unless you have followed David's route through the earlier parts of the game.

However, many people want to know what they should do with the wand – as far as I can see its only function is to be restored and in your possession at the end of the game – it stops you falling into the water and a game completed message appears Not very helpful eh? I think the best approach is to serialise the solution to the game in small doses over several weeks of the column, starting next week This ensures that we don't spoil the enjoyment too much and stops it being too boring for other people

Tony Kendle

Tony Bridge's Adventure Corner

Wide vocabulary

"Calling Bridge! Calling Bridge!" Yup, it's a weirdo, but it's also an adventurer in distress, so we must help if possible "This is Jim Richards below decks on Starship *Snowball* Wheep . . Rzzt . unable to find welding glasses . Bleep . to repair tractor, request assistance . . Rzzt . also what happens to bomb (I know/assume that it explodes) . request assistance!

"Ere! Wot's yer 'andle on CB, guv? I bin pickin' me brains ter fink of a way ter get inta the deserted 'ouse in *Urban Upstart* Can yer 'elp this snotty-nosed berk get parst the rusty door?

"Ahar, matey, oi be stuck also in *Pirate's Cove*, oi ain't found much, ceptin' a bag o' munchies, a lifebelt an' a rusty torch. Can 'ee 'elp, where be I agoin' next, matey?

"Also, verily, I am a weary traveller stuck in the mystic cheapo game entitled *The Helm*. Can ye mayhap assist my passage beyond the first 13 locations — can I enter the shop? How do I cross the chasm/ravine etc?"

As I said, a complete weirdo, but here's some help, Jim Beep beep . the glasses are in the Observatory . crackle . it's a very red bomb . rzzt . smells fishy, too

Look John, don't yer know nuffink? Yer 'afta 'ave yer bottle of milk in the mornin' don't yer? I mean, 'ow else are yer gointa get the strengff what yer need? Cor blimey, some people!

Avast there, Jim lad, why don't 'ee try going to the window, ahar! Then say what us salts of the sea are always saying Yes, verily, one of your stature must needs enter the shop, yet a key is needed to unlock the door Hasten ye to the well in the desert, good knight, and there shall be found a small key (a good score is to be had for entering the store, so you must work out how to get the key for yourself) And yes, the signs will tell you how to find an object which will aid your passage across the gorge

I hope you persevere with the rest of the adventures that you mentioned, Jim, as games like *Heroes of Karn* are well worth getting further into in this particular instance, have you tried lighting the marsh gas with the tinder? Then you can take the frog and then kiss it.

On to a comparatively normal adventurer, Tim Emanoel from Rossendale, who is creeping about the Count's castle (in Scott Adams' *The Count*) He's having trouble getting a light. You'll find a torch down a dark pit, and you can actually get it without seeing it — but in order to light it, you'll need the matches from the pantry

Worst aspect

Di Spencer (bet you've heard all the jokes, Di) writes from Wolverhampton, in part to take me to task for not ever having mentioned *Twin Kingdom Valley* — well, I have occasionally mentioned it, but never played it, so I must recruit some help John Rundle seems to have the adventure tied up — if you write to him at 26 Western Road, Aldershot, Hants GU11 3PL, I'm sure that he can sort out any problems you still have

Di is also stuck in Channel 8's *Circus*. To fix the Generator, all you need do is type just that! But the maintenance wagon, as you suspect, does hold something that you'll need in another part of the adventure, and to get in, all you need do is type *Open Door* and then *Go Door* (a construction that you'll need elsewhere) This is a good example of the worst aspect of this whole series of adventures — it may well be that you enjoy finding the right words to spur the computer on, but I prefer to spend time on the problems themselves

While I'm talking about Mysterious Adventures, Liz Stafford wrote to tell me how pleased she was to be getting so much correspondence *a year* after putting in a cry for help in the Helpline She reckons that Brian Howarth's adventures are very good and wonders what is happening to him now I imagine that he is still out there somewhere knocking out excellent programs — the last adventure he wrote (as far as I know) was *Gremlins*, and that upheld the fine tradition that he had built.

Simon Hegarty is looking for someone to write to him about *Spiderman* and *System 15000* on the C64 He is willing to exchange help in many adventures, including *The Hobbit, Thompson Twins, Gremlins, Twin Kingdom Valley Subsunk Hulk* and so on. His address is 15 Highfields, Hoylandswaine, Sheffield S30 6JP

Logical pattern

Tel and Jok (from where, I don't know) are having trouble with *Heroes of Karn* and *Jewels of Babylon*. of the former, another enduring adventure, our intrepid Tel and Jok want to know how to negotiate and/or kill the Phoenix, and also how to kill the Bat To deal with the Phoenix, which as you know rises from that pile of ashes, just water the ashes before it appears — if you're a bit tardy in this, though, you could ask Beren to attack it with the sword Shortly after this, you'll need more water to deal with another adversary, remembering your *Wizard of Oz* As for the mazes in *Jewels*, I don't know if they follow a logical pattern, but a recent Corner gave the route through a couple of them, so refer back for a solution

Tel and Jok have asked me to pass along a couple of hints to anyone currently in another Interceptor adventure, *Forest at World's End*. "When you have the sword," they say, "go to the glowing rock and type *Touch Rock*. Secondly, do not attempt to force yourself on the Princess, as she will run away"

Incidentally, some people find that the vocabulary in these Interceptor games takes a little getting used to many of your comments will take the form of *'Attack thingy With whatsit'*, *Say To fred 'Hello"* 'or *Go To x room*' as well as the more obvious constructions

Rafael Stronski is having trouble in *The Hulk* and *Snowball*. To get out of the chair, Rafael you must *Rock Chair* (and maybe correspond with Simon Hegarty for more help later) If you get the Extinguisher in *Snowball's* Engine Room you can put out any fires

Finally, a bit of help in *Se-Kaa of Assiah* in response to a plea of help from Carl Brennan. Clive Wilson has written to say that, as regards the sliding doors you should try sliding them, and to get the Rod of Light, go East twice from the Ice Block Room and open the Red Valve Light the Torch and return to the West (twice remember) and light the gas. Now go east twice and open the Green Valve and return to the West — you should now have the Rod.

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All software offered through computer swap must be in original condition and for private sale only

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Charts



Amstrad

1	(1)	Way of the Exploding Fist	(Melbourne House)	£8.95
2	(2)	Frank Bruno's Boxing	(Elite)	£8.95
3	(4)	Chiller	(Mastertronic)	£1.99
4	(3)	Finders Keepers	(Mastertronic)	£1.99
5	(10)	Red Arrows	(Database)	£8.95
6	(5)	Nonterraqueous	(Mastertronic)	£1.99
7	(–)	Alien 8	(Ultimate)	£9.95
8	(8)	Scrabble	(Leisure Genius)	£9.95
9	(9)	Beach-head	(Access/US Gold)	£9.95
10	(–)	Red Moon	(Level 9)	£9.95

Atari

1	(3)	Bounty Bob Strikes Back	(US Gold)	£9.95
2	(2)	Red Moon	(Level 9)	£9.95
3	(1)	Ghost Chaser	(US Gold)	£9.95
4	(5)	Airwolf	(Elite)	£9.95
5	(–)	Encounter	(Hi-tech)	£9.95
6	(10)	Mig Alley Ace	(Microprose)	£9.95
7	(4)	Bruce Lee	(US Gold)	£9.95
8	(–)	One on One	(Ariolasoft)	£9.95
9	(–)	Archon	(Ariolasoft)	£9.95
10	(7)	Mule	(Ariolasoft)	£14.95

Top Twenty

1	(3)	Way of the Exploding Fist *(Spectrum/64)*	Melbourne House
2	(–)	Summer Games II *(C64)*	Epyx/US Gold
3	(–)	Sky Fox *(C64)*	Ariolasoft
4	(3)	Nightshade *(Spectrum)*	Ultimate
5	(4)	Frank Bruno's Boxing *(Spectrum)*	Elite
6	(7)	Frankie Goes to Hollywood *(Spectrum/C64)*	Ocean
7	(6)	Hypersports *(Spectrum/C64)*	Imagine
8	(5)	Beach-head II *(C64)*	Access/US Gold
9	(-)	Now Games *(Spectrum/C64)*	Virgin
10	(9)	Action Biker *(Spectrum/C64)*	Mastertronic
11	(8)	Finders Keepers *(Spectrum/C64/Amstrad/MSX)*	Mastertronic
12	(11)	Elite *(C64/BBC/Electron)*	Firebird/Acornsoft
13	(15)	Dambusters *(Spectrum/C64)*	Sydney/US Gold
14	(14)	Soft Aid *(Spectrum/C64)*	Various Artists
15	(17)	Red Moon *(Spectrum/C64/BBC/Electron/Amstrad)*	Level 9
16	(12)	Beach-head *(Spectrum/C64/BBC/Amstrad/Atari)*	Access/US Gold
17	(13)	Formula I Simulator *(Spectrum/C64/C16)*	Mastertronic
18	(–)	Highway Encounter *(Spectrum)*	Vortex
19	(–)	BMX Racers *(Spectrum/C64/C16)*	Mastertronic
20	(–)	Spy vs Spy *(Spectrum/C64)*	Beyond

Figures compiled by Gallup/Leisurescope

BBC

1	(1)	Beach-head	(Access/US Gold)	£9.95
2	(7)	Elite	(Acornsoft)	£14.95
3	(2)	Revs	(Acornsoft)	£14.95
4	(4)	Combat Lynx	(Durell)	£8.95
5	(3)	Alien 8	(Ultimate)	£9.95
6	(6)	Knight Lore	(Ultimate)	£9.95
7	(–)	Match Day	(Ocean)	£9.95
8	(9)	Mini Office	(Database)	£5.95
9	(–)	Hobbit	(Melbourne House)	£17.95
10	(5)	Repton	(Superior)	£7.95

Commodore 64

1	(1)	Summer Games II	(Epyx/US Gold)	£9.95
2	(–)	Sky Fox	(Ariolasoft)	£9.95
3	(2)	Beach Head II	(Access/US Gold)	£9.95
4	(3)	Way of the Exploding Fist	(Melbourne House)	£9.95
5	(4)	Frankie goes to Hollywood	(Ocean)	£9.95
6	(5)	Elite	(Firebird/Acornsoft)	£14.95
7	(6)	Hypersports	(Imagine)	£7.95
8	(7)	Kik Start	(Mastertronic)	£1.99
9	(8)	Action Biker	(Mastertronic)	£1.99
10	(–)	Rescue On Fractalus	(Activision)	£10.95

Spectrum

1	(1)	Way Of The Exploding Fist	(Melbourne House	£8.95
2	(2)	Nightshade	(Ultimate)	£9.95
3	(3)	Frank Bruno's Boxing	(Elite)	£6.95
4	(6)	Frankie goes to Hollywood	(Ocean)	£9.95
5	(4)	Hypersports	(Imagine)	£7.95
6	(10)	Highway Encounter	(Vortex)	£7.95
7	(5)	Dambusters	(Sydney/US Gold)	£9.95
8	(–)	Now Games	(Virgin)	£8.95
9	(–)	Soft Aid	(Various Artists)	£4.95
10	(8)	Dynamite Dan	(Mirrorsoft)	£6.95

All figures compiled by Gallup/Leisurescope

Readers' Chart No 41

1	(3)	Way of the Exploding Fist (Spectrum/C64/Amstrad)	Melbourne House
2	(1)	Hypersports (Spectrum/C64)	Imagine
3	(5)	Dun Darach (Spectrum/Amstrad)	Gargoyle
4	(6)	Frank Bruno's Boxing (Spectrum)	Elite
5	(2)	Elite (C64/BBC/Electron	Firebird/Acornsoft
6	(4)	Soft Aid (Spectrum/64)	Various Artists
7	(–)	Spy vs Spy (Spectrum/C64)	Beyond
8	(2)	Red Moon (Spectrum/C64/BBC/Electron/Amstrad)	Level 9
9	(8)	Shadowfire (Spectrum/64)	Beyond
10	(–)	Summer Games II (C64)	Epyx/US Gold

Winning phrase No 41 "Kangaroo softies hit for six, sport!" from Darren Levene, Ilford, Essex, who receives £25 Runners up "Paris ghost exposed in Eiffel tower" from T E Burdis of London SW14, "I was thirsty exploring deep potholes" from Andrew Cunningham of Oban, Argyll, and "Frankly, I find this too easy for words" from David Crighton of Retford Notts

Now voting on week 43 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 43 closes at 2pm on Wednesday September 18 1985 Entries received after that time will not be eligible for inclusion in that week's voting. The judges' decision is final. Only one entry per individual per week will be allowed.

Name .... **My top 3: Voting Week 43**

Address .... 1..

.... 2..

.... 3..

My phrase is: ....

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The CPC 464 comes with built-in datacorder, and the CPC 6128 with built-in disc drive. And both have either a full colour monitor or a green screen.

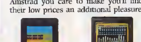
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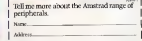




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New Releases

MATERIALISE

Wizard's Lair was a fairly successful game on the Spectrum and, inevitably, conversions now follow. Unusually Amstrad and Commodore 64 editions of the game are [illegible] on one tape — a combination that I've not seen before, Spectrum/Amstrad being more common.

The game owes more than a little to Ultimate, take *Sabre Wulf's* setting and add *Atic Atac's* plot and you're getting the idea. The game has you seeking the four pieces of a [illegible] over the usual ancient realm full of the usual nasties. You need keys to get through doors, secret exits and entrances, eating is a good idea and mostly you fight off the hordes of things that materialise moments after you have entered a room.

And the unoriginality of the game, rather irritating particularly at full price, but on the other hand it is nicely done, graphics are colourful and detailed and the pace of the game is well structured so that it isn't too infuriatingly difficult for beginners. Hardened arcade freaks probably won't be impressed — others may enjoy the game very much.

Program *Wizard's Lair*
Price *£7.95*
Micro *Amstrad/Commodore*
Supplier *Bubble Bus, 87 High Street, Tonbridge, Kent TN9 1RX*

LOW KICKS

Karateka is a karate game that pre-darts (in the US on the Apple II) *Way of the Exploding Fist* by a year or more. On balance it isn't as good on the C64 but nevertheless there is much to recommend it.

Like *Way* the game is basically a series of fights against ever more powerful opponents fight movements are all joystick controls and mixed short and long fire button presses.

The manoeuvres have been kept to high/middle/low locks and high/middle/low punches – it's adequate, and there are some nice comic book 'off' flashes when you hit home, but I missed the old low punches and sliding side sweeps.

Where *Karateka* does score is in background plot. Where *Way* basically had you seeking higher spiritual planes through correct fighting technique, *Karateka* gives you a damsel in distress to rescue. Each opponent is sent to meet you by a baddie warlord called Akuma, who has incarcerated the beautiful but helpless and hopeless Princess Mariko – you actually see this bit as a sort of cameo screen – warlord points angrily, princess moves slowly to cell, collapses crying on cell floor . . . it's pretty tragic, I can tell you.

You race towards the mountain fortress doing battle with each new champion (and an occasional bird as well).

All this plot adds something

Pick of the week

MINOR STRATEGY

A long time ago, an American company called Williams produced the best arcade machine in the world – and they called it *Defender*. Being an arcade classic when the home micro boom took off, it became one of the most frequently plagiarised formats, even to the present day – take a good look at the excellent *Dropzone* for example.

Defender was a great success for Williams, as (to a lesser extent) was the follow-up, *Stargate*. One of their lesser post-*Defender* ventures, though, was a game called *Sinistar*.

It is now available, called *Deathstar* on the BBC and Electron from Superior Software – and it really is very good indeed.

Very fast smooth scrolling with bags of zapping plus a minor strategy element. As far as I'm concerned, it's better than the original (for a start I now know what I'm supposed to be doing), and it's all very professional as you mine the planetoids for Starbombs to destroy Sinistar (whoops, sorry, I mean Deathstar), and blow away the assorted nasties that get in the way. And just like the original – and this must have taken up bags of code to implement – you can't turn the sound off. Oh well . . . despite this major drawback for we late night addicts, this one is a must for all BBC zap fiends.

Program *Deathstar*
Price *£11.95 (disc)*, *£9.95 (tape)*
Micro *BBC B/Electron*
Supplier *Superior Software, Regent House, Skinner Lane, Leeds 7*

This Week

Program	Type	Micro	Price	Supplier
[illegible]	Ad	Amstrad	£8.95	Orpheus
[illegible]	Arc	Amstrad	£6.95	Mirrorsoft
[illegible] Illustrator	Ut	Amstrad	£16.95	Gilsoft
[illegible]	Ad	Atari ST	£24.95	Talent
[illegible]	Arc	BBC	£9.95	Acornsoft
[illegible]	Arc	BBC	£9.95	Acornsoft
[illegible]	Arc	BBC	£9.95	Acornsoft
[illegible]	Arc	BBC	£9.95	Acornsoft
[illegible] Force	Ad	Commodore 64	£6.95	Beyond
[illegible] Comets	Arc	Commodore 64	£7.95	Martech
[illegible] Wall	Arc	Commodore 64	£9.95	Firebird
[illegible]	Arc	Commodore 64	£9.95	Firebird
[illegible]	S	Commodore 64	£9.95	Activision
Barry McGuigan	S	Commodore 64	£6.95	Activision
Hacker	S	Commodore 64	£9.95	Activision
ICE	Ut	QL	£49.95	Eidersoft
Madcap Manor	Ad	Spectrum	£5.50	Gilsoft
Merlock the Mede	Ad	Spectrum	£5.95	Terminal
The Hollow	Ad	Spectrum	£5.50	Gilsoft
Elite	Arc	Spectrum	£14.95	Firebird
Geoff Capes St Man	Arc	Spectrum	£7.95	Martech
Tujad	Arc	Spectrum	£8.95	Orpheus
Zoids	Arc	Spectrum	£7.95	Martech
Horrow Squeaks	Ed	Spectrum	£6.95	Macmillan
Screen Play	Ed	Spectrum	£9.95	Macmillan
The Birthday Party	Ed	Spectrum	£9.95	Macmillan
The Patch	Ut	Spectrum	£5.95	Gilsoft

to the game, the movie-like cutting from one scene to the other works well, eg, you defeat a baddie, cut to warlord sending another to meet you, cut back to you running on and meeting new baddie The music too, is more inventive than usual, if somewhat bizarre

My only real criticism is the way the tape produces an infuriating version of the disc. On disc the game loads in different sections for different stages On tape this means loading up a new bit every so often and it gets very infuriating

It's a shame that *Way* is that little bit better, because that factor aside, this is an excellent program



Program *Karateka*
Price *£8 95*
Micro *Commodore 64*
Supplier *Ariolasoft*
Suite 105/106
Asphalte House
Palace Street
London
SW1E 5HS

HIGH KICKS

Once Moore Bond leaps into action like an emaciated ballet dancer in the Amstrad version of *A View to a Kill*, the Domark spectacular that has already had Spectrum and Commodore owners feverish with indifference.

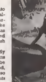
Not that the game is exactly bad Hype and film tie-ins aside, it would probably be pronounced okayish to good, but everybody expected so much more from its possibilities.

Actually *A View to a Kill* is three arcade games and an animated intro which replicates the moving eyeball/blood section that preceeds every Bond movie (it may be the best bit of the whole program) — the Amstrad chugs out the Bond theme rather tinnily, but at least it's a million times better than the Spectrum equivalent

Curiously enough the first game, universally considered to be the worst one on the other machines, has now been sent to the back of the queue, as game number three This, of course, makes nonsense of the plot, but never mind.

Game one is now the silicon mine where James Bond leaps about doing high kicks and pirouettes, searching for a way to defuse the timer and the situation There is also a joystick controlled menu system which lets our hero select different actions and objects It reminds me of an inferior *Impossible Mission*.

Game two uses a similar menu system to part one but in a slightly more adventure



orientated setting The task is to get out of the burning city hall, with the usual half witted Bond woman It involves finding keys, solving puzzles, and quite an ingenious mixture of text and graphics I think it's the best section.

Part three was part one and supposedly what you have done in the past sections has some sort of bearing on how you do in this one, according to the instructions Since the Paris section is sequentially first in the film, presumably you get beamed backwards in time

The Paris section is still pretty bad although the display has been beefed up a bit. Bottom right is a top view of city streets and your car — you have to chase a parachute around trying to catch Mayday where she lands Above this is a rather spurious forward view, it doesn't show any other cars, and doesn't must relate to the map at the bottom anyway

So, several curate's eggs on one tape, and a program that is both laughably incompetently bodged, clever and dull, impressive and tedious.

Program *A View to a Kill*
Price *£10 90*
Micro *Amstrad*
Supplier *Domark*
204 Worple Road
London
SW20 8PN

A BONUS

Macadam Bumper is, oddly enough, a French program being issued here by PSS It's a pinball constructor and contains Amstrad and Spectrum versions on one tape

First attempt at playing the game revealed a major question — how to make the ball fire I pressed every key I could think of and discovered the answer well hidden on the insert

The system works very well, the demo pinball machine has all the right ingredients, flashing lights, bonuses, sets of flippers, etc

Devising your own pinball table is straightforward, simply choose a component from a selection on screen and position it where you want on the basic board layout

To the best of my knowledge, *Macadam Bumper* is the first pinball constructor for either the Amstrad or the Spectrum and that should make it pretty successful.

Program *Macadam Bumper*
Price *£7.95*
Micro *Spectrum/Amstrad*
Supplier *PSS*
452 Stoney Stanton
Road
Coventry

This Week

Rem Pythonisar	Arc	Vic 20	**£2.50**	A + G
High Lo	S	Vic 20	**£2 50**	A + G
Synsoundo	Ut	Vic 20	**£2.50**	A + G

Key: Ad – adventure **S** – strategy-simulation
Arc – arcade **Ut** – Utility
Ed – education

A + G, 44 Casewick Lane Uffington Stamford, Lincs PE9 4SX **Acornsoft,** Betjeman House, 104 Hills Rd. Cambridge CB2 1LQ 0223 316039 **Activision** 15 Harley House Marylebone Road London NW1 01-486 7588 **Beyond** Lector Court 153 Farringdon Road, London EC1R 3AD 01-837 2899 **Eldersoft,** Hall Farm, North Ochendon Upminster Essex 01-478 1291 **Firebird** Wellington House, Upper St Martin's Lane, London WC2H 9DL 01-379 6755 **Gilsoft** 30 Hawthorne Road Barry South Glam, 2CF 68LE 0222 41361 **Macmillan,** Macmillan Information Systems 4 Little Essex Street, London WC2R 3LF 01-836 6633 **Martech,** Martech House Bay Terrace Pevensey Bay East Sussex BN24 6EE 0323 768456 **Mirrorsoft,** Mirror Group Holborn Circus London EC1P 1DQ 01-353 0246 **Orpheus** Unit 1 Church Farm Hatley St George Nr Sandy Beds SG19 3UP **Talent** Curran Building 101 St James Road Glasgow G4 0NS 041 552 2128 **Terminal,** Derby House Derby Street Bury BL9 0NW 061 761 4321



Tower of Babel

Groups of workers were commissioned to build a magnificent tower. It was to reach the skies and be the largest such edifice ever constructed.

They started out with enthusiasm and conferred together on the technology and the processes required to achieve their goal.

But as work progressed, each small caucus developed its own way of speaking within its small circle to like-minded workers, to help them solve their own particular problems in building their part of the tower. Slowly they began to find difficulty in communicating with members of other groups until, finally, each worker had developed his or her own tongue and had become unable to talk to any one else. And work on the tower ceased.

The characteristics of the work and the complex demands of the technology involved the rejection of other work technology and groups. In other words, as the database of knowledge required to work increased, it was no longer possible for any one person to comprehend the whole – and each was forced to specialise. The same situation exists today in the scientific community. A solid-state physicist would find great difficulty in communicating details of the 'leading edge' of his or her technology to, say, a mediaeval historian.

We are fast reaching a similar situation to the workers on the tower with micros.

Take the early days when dialogue was difficult to learn and the machine relatively simple (with mechanical contrivances and hard operations). People could converse with one another in a common attack on the vagaries of the machines.

With the advent of Basic, developed out of Fortran, the troubles really began. Not even abbreviations were agreed – whereas some machines accepted ? others wanted P and there was single-stroke key entry and refusal to accept abbreviations at all (and everything in upper case).

We were bewildered by Basic Levels I, II and III, as if there was some hierarchy of the language which only the sophisticates could understand.

With the advent of procedures, of which there is no agreed format, *Gosub* and *Goto* were relegated to Non-U ways of addressing machines.

Perhaps it is a mistake to call 'language' the instruction design for getting the computer to work. Unlike human beings, the computer cannot draw in historical contexts of what the words mean. Nor can it evaluate the intelligence of the source of the commands by slender clues about the originator of the words.

Human beings, like computers, bring to language a labelling system. But they also weave the spell of language to give an indexical expression to the words of almost infinite variation.

Computers have no such complex communicative and interpretive skills. Their understanding is almost completely inflexible – the syntax has to be absolutely correct for meaning to be transferred. Yet different computer languages are still proliferating at a hectic rate – all the time reducing the number of machines that can talk to each other.

If we are to avoid the kind of Babel chaos that at the moment seems inevitable, some form of standard protocol for communication between micros must be established. Agreement must be reached between manufacturers to at least standardise some of the Basic instructions so that people can transfer from one machine to another without extensive re-learning.

Ned Dawson

Curious property

Puzzle No 174

Jamie was idly toying with his pocket calculator the other day when he found a couple of numbers which exhibited a rather curious property. The digits in the *product* of the two numbers were in reverse order to the digits of their *sum*. He was so impressed by this that he showed his results to his father who told him that there were an infinite number of such pairs of numbers, each *one* having a direct relationship to the pair that he had discovered.

If Jamie's numbers contained three and one digits respectively, can you determine what those numbers were and find the basis of the infinite series of pairs of numbers?

Solution to Puzzle 169

In the crossnumber puzzle, A=253 B=239 and C=107. From the number of spaces in the grid we know that both B and C must be in the range 100 to 317, as they both have five digit squares.

Also the difference between *A* and *B* must be in the range 22 to 31 in order to result in a five digit cube *and* a three digit square. In the case of the cube, *A* must be larger than *B*, otherwise a negative value would result. Therefore *A* is in the range of *B*+22 to *B*+31.

```
10 FOR B=100 TO 317
20 FOR A=B+22 TO B+31
30 LET P=B*B:LET P$=STR$(P)
40 LET Q=A*B:LET Q$=STR$(Q)
50 LET R=(A-B)*(A-B):LET R$=STR$(R)
60 LET S=(A-B)*R:LET S$=STR$(S)
70 IF MID$(P$,1,1)<>MID$(R$,1,1)THEN GOTO 120
80 IF MID$(Q$,1,1)<>MID$(R$,3,1)THEN GOTO 120
90 IF MID$(P$,3,1)<>MID$(S$,1,1)THEN GOTO 120
100 IF MID$(Q$,3,1)<>MID$(S$,5,1)THEN GOTO 120
110 PRINT A,B
120 NEXT A
130 NEXT B
```

The program tests the values for *B* for values for 100 to 317 and computes values for clues one across, four across, one down, and two down. It then checks to determine if digits which interlock in the grid are alike.

Winner of Puzzle 169

The winner is P J Gabbitas of Station Road, Hailsham, East Sussex, who receives £10.

Rules

The closing date for Puzzle No 174 is October 9.

The Hackers

&I say we MUST get into the 32-bit workstation sector of the market!
BOARD ROOM
MEETING IN PROGRESS
-it should have a megabyte of RAM, &a 10 Meg disk, &parallel interfaces, & an arithmetic co-processor, &..
Er...
-Martin, can I just stop you there for a minute...
M

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▶ KARATEKA

A Karateka is one trained in the Way of Karate the centuries old martial art of Japan. In this classic story of one man's battle against insurmountable odds your mission is to rescue a beautiful princess from a dungeon deep inside the palace of the evil warlord Akuma.

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- ▶ Suspenseful, move-like story
- ▶ Run, Punch & Kick ability
- ▶ Smoothly animated characters
- ▶ 3D scrolling backgrounds
- ▶ Realistic Karate fights to the death

KARATEKA from Brøderbund

US No 1 HIT!!

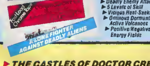
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- ▶ Deadly Enemy Attack Planes
- ▶ 5 Levels of Skill
- ▶ Vicious Heat-Seeking Missiles
- ▶ Ominous Dormant/Active Volcanoes
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